Hecate Strait Survey, *M/V Nucleus*, April 1-18, 1982

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ABSTRACT

Fargo, J., W. R. Harling, M. W. Saunders, and S. J. Westrheim. 1982. Hecate Strait survey, M/V NUCLEUS, April 1-18, 1982. Can. Data Rep. Fish. Aquat. Sci. No. 351: iii + 127 p.

The Pacific Biological Station conducted a spring trawl survey of Hecate Strait in April, 1982. The purpose of the survey was to examine the seasonal distribution and estimate abundance of juvenile rock sole and English sole.

This report presents results of the survey regarding haul locations, catch rates, and biological data collected.

Key words: Survey, Hecate Strait, rock sole, English sole, distribution, abundance.

RÉSUMÉ

Fargo, J., W. R. Harling, M. W. Saunders, and S. J. Westrheim. 1982. HEcate Strait survey, M/V NUCLEUS, April 1-18, 1982. Can. Data Rep. Fish. Aquat. Sci. No. 351: iii + 127 p.

La Station de biologie du Pacifique a effectué, en avril 1982, un levé par chalutage du détroit d'Hécate. Le levé avait pour but d'étudier la distribution saisonnière des jeunes soles du Pacifique et des jeunes plies grand-père et d'en évaluer le nombre.

Le présent rapport expose les résultats du levé en ce qui a trait aux endroits de chalutage, aux taux de captures et aux données biologiques recueillies.

Mots clés: levé, détroit d'Hécate, sole du Pacifique, plie grand-père, distribution, abondance.

INTRODUCTION

Since 1980, an annual (August) fishing survey has been conducted in Hecate Strait (Stocker et al. 1981; Fargo et al. 1982). Rock sole and English sole juveniles are the principal targets of the survey. Juvenile abundance indices calculated from survey catch data will be used to predict future recruitment for these species to fisheries in Hecate Strait.

In 1982, a spring (April) survey of Hecate Strait was conducted to examine seasonal changes in distribution for these species, assess the importance of shallow (<55-m, 20-fm) areas as habitat for juvenile flatfish, and estimate abundance of juvenile rock sole and English sole. In previous years, excessive catches of spiny dogfish (Squalus acanthias) had interfered with assessment of juvenile flatfish abundance in shallow depth areas. Catches of spiny dogfish in shallow depths (<55-m, 20-fm) on the 1982 survey were reduced significantly from the August (1980, '81) surveys. A dogfish seasonal migration to deeper water in late fall to spring has been reported by fishermen.

Haul locations, catch data, and biological and oceanographic data summaries for the April 1982 survey are presented in this report.

MATERIALS AND METHODS

The M/V NUCLEUS, a 20-m (65-ft) steel-hulled stern trawler was the vessel chartered for the survey.

Sampling gear used was the same as for previous surveys (Fig. 2). A 21.3-m (70-ft) Gulf semi-balloon shrimp trawl was fished with 27.4-m (15-fm) sweep lines using the vessel's 2.7 x 1.4-m (9 x 4.5-ft) rectangular wooden doors.

Haul durations were kept short (30 min) so that the entire catch could be weighed and sampled. A specially designed 1.8 x 1.8-m (6 x 6-ft) wooden sorting table supported by 1-m (3-ft) 4 x 4 legs facilitated faster sorting of catches and decreased overall sampling time. Catches (<1300 kg) were dumped onto the sorting table and sorted by species group for weighing. Sampling was also conducted on the sorting table.

To obtain ageing structures, heads were removed from rock sole and English sole at sea, for later processing at PBS. Stratified samples (10 fish per cm interval fork length) of head length/fork length were collected for English sole and rock sole to establish head length/fork length relationships. Head lengths were measured with dial micrometers to the nearest millimeter. Head length measured was from the tip of the upper lip to the end of the operculum on the blind side of the fish. Length frequencies (fork length) were also obtained for each ageing sample. The samples were

packed in plastic bags and labelled according to species, sex, tow number, and date and stored in chilled seawater (-2.2°C) in the vessel's holding tanks. Once ashore they were frozen until processed.

The same stratified random survey design used in 1980, '81, was employed for the 1982 survey. Additional effort was expended in shallow 73-m (<30 fm) depths.

RESULTS

A total of 70 hauls were made during the survey (Fig. 1). Bridge log information and catch data by haul is contained in Appendix Table 1. Principal species caught on the trip included:

Species	Weight (kg)	% of total catch
English sole	3793	27.4
Pacific cod	1563	11.3
Rock sole	1517	10.9
Spiny dogfish	1131	8.2
Ratfish	829	6.0
Pacific halibut[1]	766	5.5
Butter sole	417	3.0
Big skate	370	2.7
Others[2]	3468	25.0

[1]Halibut caught were measured and released.

[2]Individual totals for other species were <2% of the total catch.

A list of biological samples collected during the cruise is contained in Table 1. Fork length measurements were collected from 10,605 specimens, comprising 13 species. English sole length measurements totalled 3,471, of which heads were collected from 2,305. Rock sole length measurements totalled 3,929, of which heads were collected from 2,203. Gonad maturity records were collected from 157 Pacific cod, 954 rock sole, and 30 sand sole.

Over the depth range of 10-60 fm, densities, as measured by catch rates (N/h) of small (<30 cm) specimens, varied among the two target species (Table 2). For English sole, catch rates peaked at 21-30 fm (73/h) and 51-60 fm (330/h). Rock sole catch rates peaked at 31-40 fm (164/h). No small English sole were caught at 10-14 fm, and few rock sole (8/h). Only comparable catch data (same general time of day, state of tide) were used in calculating catch rates.

Head length/fork length relationships for male and female English sole are shown in Fig. 3, 4, while those for male and female rock sole are shown in Fig. 5 and Fig. 6. Detailed data records are contained in Appendix Tables 4-5 (English sole) and 6-7 (rock sole).

Gonad condition was recorded for some specimens of Pacific cod, rock sole, and sand sole. Table 3 contains maturity criteria for Pacific cod and Table 4, for flatfish. For Pacific cod, 66% of the 64 mature female, and 70% of the 64 mature male gonads were in the resting stage (Table 5). For rock sole, 53% of the 573 mature ovaries were in the resting stage, 36% in the developing stage, and 10% in the spent stage (Table 6). For sand sole, 73% of the mature ovaries were in the developing stage and 23% in the gravid stage (Table 7).

Fourteen XBT (expendable bathythermograph) casts were completed in the study area, over a depth range of 25-131 m (15-70-fm) (Appendix Table 3). Surface water temperatures ranged from 6.9-8.1°C, and bottom temperatures, 6.9-7.7°C. Temperature profiles were essentially isothermal.

REFERENCES

Fargo, J., T. Hoyt, and K. Robinson. 1982. Trawl survey of juvenile flatfish in Hecate Strait, M/V ARCTIC OCEAN, August 6-21, 1981. Can. Data Rep. Fish. Aquat. Sci. 324: iii + 110 p.

Stocker, M., J. Fargo, W. R. Harling, and S. E. MacLellan. 1981. Juvenile flatfish survey of M/V NUCLEUS in Hecate Strait, August 11-25, 1980. Can. Data Rep. Fish. Aquat. Sci. 297: iii + 150 p.

Table 1. Inventory of biological data collected. M/V NUCLEUS Hecate survey. April 1-18, 1982.

Species	Samples[a] L	L/S	L/S/A	L/S/M	L/S/A/M
Butter sole	333	304	-	-	-
Dogfish	201	201	-	-	-
Dover sole	149	149	-	-	-
English sole	3,471	3,406	2,305	-	-
Pacific cod	746	424	-	157	-
Pacific halibut	287	-	-	-	-
Pacific herring	148	-	-	-	-
Pollock	408	291	-	-	-
Rock sole	3,929	3,818	2,203	954	596
Sablefish	99	-	-	-	-
Sandlance	551	-	-	-	-
Sand sole	215	160	-	30	-
Yellowtail rockfish	68	-	-	-	-

[a]L-length
S-sex
A-age
M-maturity

Table 2. Target species catch rates by depth.

Depth interval	Species	Mean catch rate (kg/hr)	Mean catch rate (#/hr)[a]	n
0-18-m	English sole	-	-	5
(0-10-fm)	Rock sole	68.8	8	5
20-37-m	English sole	20.2	43	23
(11-20-fm)	Rock sole	46.7	32	23
38-55-m	English sole	28.2	73	19
(21-30-fm)	Rock sole	68.0	72	19
57-73-m	English sole	522.7	64	14
(31-40-fm)	Rock sole	53.5	164	14
75-91-m	English sole	114.3	210	5
(41-50-fm)	Rock sole	20.4	74	5
93-110-m	English sole	135.4	330	3
(51-60-fm)	Rock sole	8.2	4	3

[a]No.< 30 cm.

Table 3. Criteria for condition of Pacific cod gonads.

Condition	Testes	Ovary
1. Immature	String-like, translucent.	Small, translucent.
2. Maturing	Small, some proportionally large convolutions, translucent to white.	Small, coloring.
3. Mature	Large, convolutions firm, whitening.	Large, opaque, creamy, blood vessels prominent.
4. Mature	Large, convoluted, white.	Large, eggs visible, creamy yellow.
5. Mature (ripe)	Large, milt running, white.	Large, eggs translucent.
6. Mature (spent)	Medium, convolutions flaccid, bloodshot.	Medium, flaccid, bloodshot.
7. Mature (resting)	Small, convolutions firm, translucent red, or tan.	Small, firm, black or grey.

Table 4. Criteria for condition of flatfish gonads.

Condition	Testes	Ovary
1. Immature	Small, elongated, pink, and translucent.	Small, pink, translucent, and gelatinous.
2. Maturing	Enlarging, bulbous, pink, and firm.	Enlarging, pink, and granular.
3. Developing	Enlarging, firm, white, and retaining sperm.	Cream yellow to orange, granular and containing some opaque eggs.
4. Gravid		Full of eggs, eggs partly translucent.
5. Ripe	Enlarged, white, running sperm evident.	Full of translucent eggs. Eggs extruded from oviducts under slight pressure.
6. Spent	Flaccid, shrunken, brownish, somewhat gelatinous.	Flaccid, ovarian membrane vascular (purple) and sac-like.
7. Resting	Firm, beige, not enlarged.	No eggs discernible, pale yellow to orange, gelatinous.

Table 5. Pacific cod maturity stages.

Haul no.	Males Maturity stages								Females Maturity stages							
	1	2	3	4	5	6	7	T	1	2	3	4	5	6	7	T
36	1	-	-	5	1	1	1	9	1	-	2	3	-	-	-	6
50	5	1	1	-	3	-	10	20	16	-	7	-	-	-	5	28
54	4	-	-	-	3	3	29	39	1	-	5	-	-	2	34	42
60	-	-	1	1	-	-	5	7	-	-	-	-	-	3	3	6
Totals	10	1	2	6	7	4	45	75	18	-	14	3	-	5	42	82

Table 6. Rock sole maturity stages.

Fork length (cm)	Males Maturity stage								Females Maturity stage							
	1	2	3	4	5	6	7	T	1	2	3	4	5	6	7	T
19	1	-	-	-	-	-	-	1	4	-	-	-	-	-	-	4
20	2	-	-	-	-	-	-	2	4	-	-	-	-	-	-	4
21	1	-	-	-	-	-	-	1	6	-	-	-	-	-	-	6
22	6	-	-	-	-	-	-	6	4	-	-	-	-	-	-	4
23	6	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1
24	5	-	-	-	-	-	-	5	6	-	-	-	-	-	-	6
25	2	-	-	-	-	-	-	2	5	-	-	-	-	-	-	5
26	1	1	-	-	-	-	-	2	9	-	-	-	-	-	-	9
27	6	1	2	-	-	-	-	9	6	-	-	-	-	-	-	6
28	3	1	1	-	-	-	-	5	5	-	-	-	-	-	-	5
29	4	1	3	-	-	-	-	8	4	-	-	-	-	-	-	4
30	4	1	4	-	-	-	-	9	11	1	-	-	-	-	-	12
31	9	0	10	-	-	-	-	19	23	2	-	-	-	-	-	25
32	3	3	4	-	-	-	-	10	28	3	4	-	-	1	-	36
33	2	2	8	-	5	-	-	17	34	4	5	-	-	2	4	49
34	2	2	3	-	3	-	-	10	27	8	6	-	-	0	4	45
35	1	2	6	-	5	-	-	14	16	12	20	-	-	1	0	49
36	-	-	1	-	4	-	-	5	5	7	25	1	-	0	17	55
37	-	-	1	-	3	-	-	4	4	8	22	0	-	5	24	63
38	-	-	-	-	0	-	-	0	1	2	38	1	-	1	19	62
39	-	-	-	-	1	-	-	1	-	-	20	1	-	3	29	53
40	-	-	-	-	-	-	-	-	-	-	13	1	-	5	25	44
41	-	-	-	-	-	-	-	-	-	-	12	1	-	1	24	38
42	-	-	-	-	-	-	-	-	-	-	11	0	-	8	32	51
43	-	-	-	-	-	-	-	-	-	-	8	0	-	7	30	45
44	-	-	-	-	-	-	-	-	-	-	7	0	-	3	24	34
45	-	-	-	-	-	-	-	-	-	-	4	0	-	6	16	26
46	-	-	-	-	-	-	-	-	-	-	4	0	-	3	16	23
47	-	-	-	-	-	-	-	-	-	-	3	0	-	2	13	18
48	-	-	-	-	-	-	-	-	-	-	2	0	-	3	10	15
49	-	-	-	-	-	-	-	-	-	-	2	0	-	4	3	9
50	-	-	-	-	-	-	-	-	-	-	-	0	-	0	9	9
51	-	-	-	-	-	-	-	-	-	-	-	0	-	0	1	1
52	-	-	-	-	-	-	-	-	-	-	-	1	-	1	2	4
53	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	1
54	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
55	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	2
Totals	53	14	43	-	21	-	-	131	203	47	206	6	1	57	303	823

Table 7. Sand sole maturity stages.

Maturity Stage	Males Lengths in cm	Females Lengths in cm
1	22	22/25/25
2	29	-
3	32/37	28/29/30/32/33/33/35/35/36/37/37/38/39/41/42/56
4	-	28/32/37/37/39
5	-	34
6	-	-
7	34	-

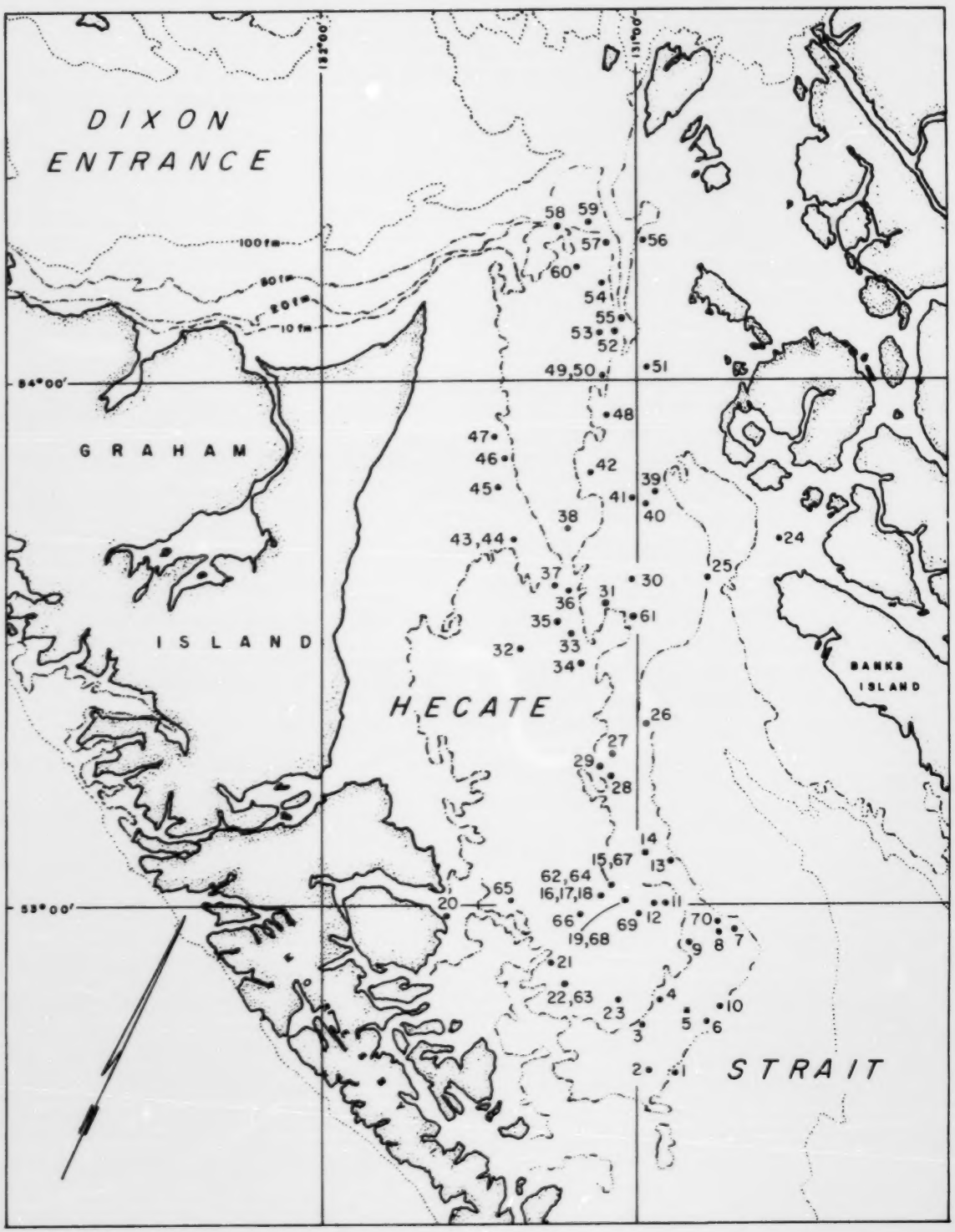
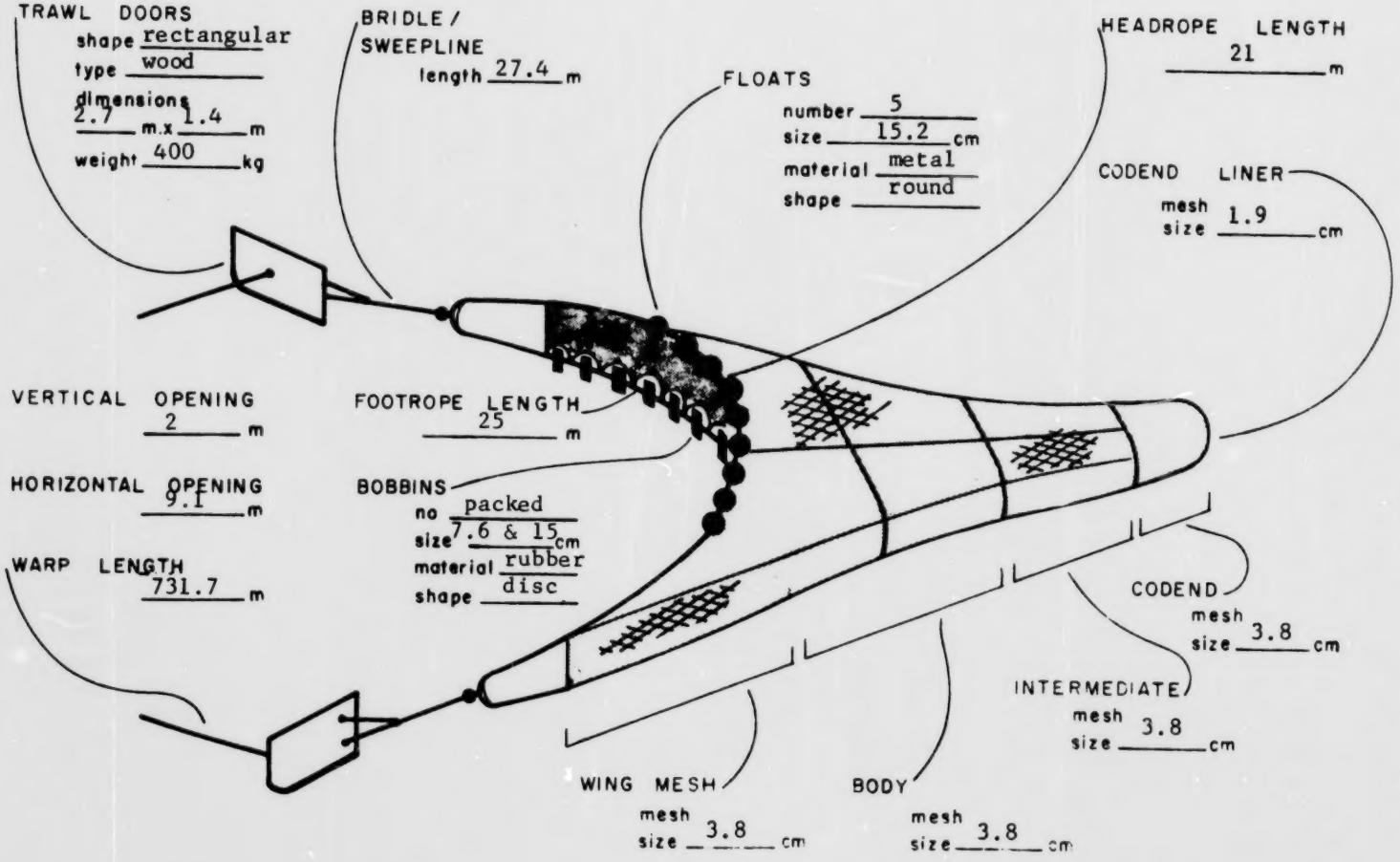


Fig. 1. Haul locations for M/V NUCLEUS, Hecate Strait survey, April 1-18, 1982.

Fig. 2. NET DIMENSIONS AND CHARACTERISTICS FOR BOTTOM TRAWL

VESSEL M/V NUCLEUS NET Gulf semi-balloon shrimp trawl

OBSERVATION PERIOD April 1-18, 1982



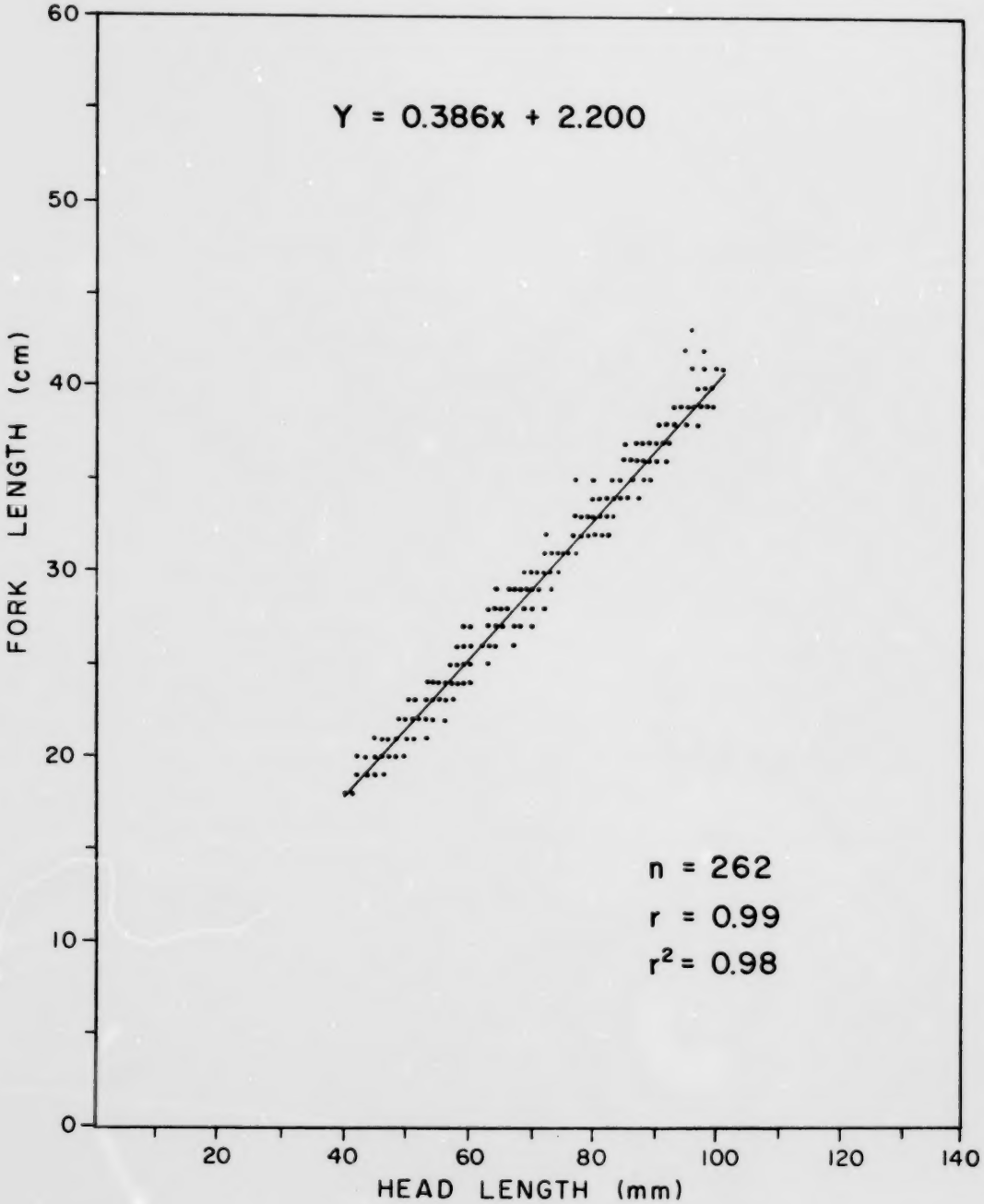


Fig. 3. Head length/fork length relationship for English sole males in Hecate Strait, April 1-18, 1982.

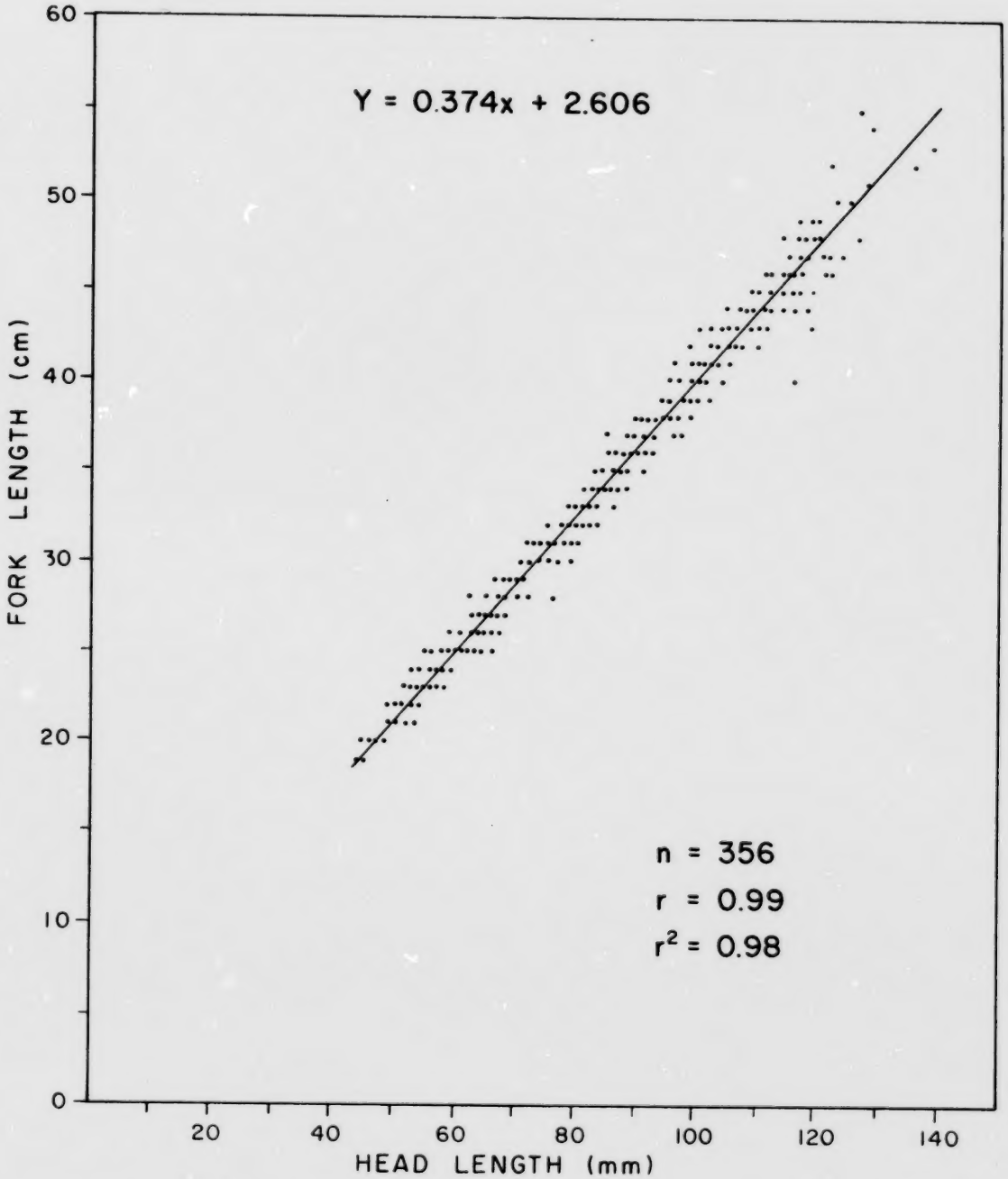


Fig. 4. Head length/fork length relationship for English sole females in Hecate Strait, April 1-18, 1982.

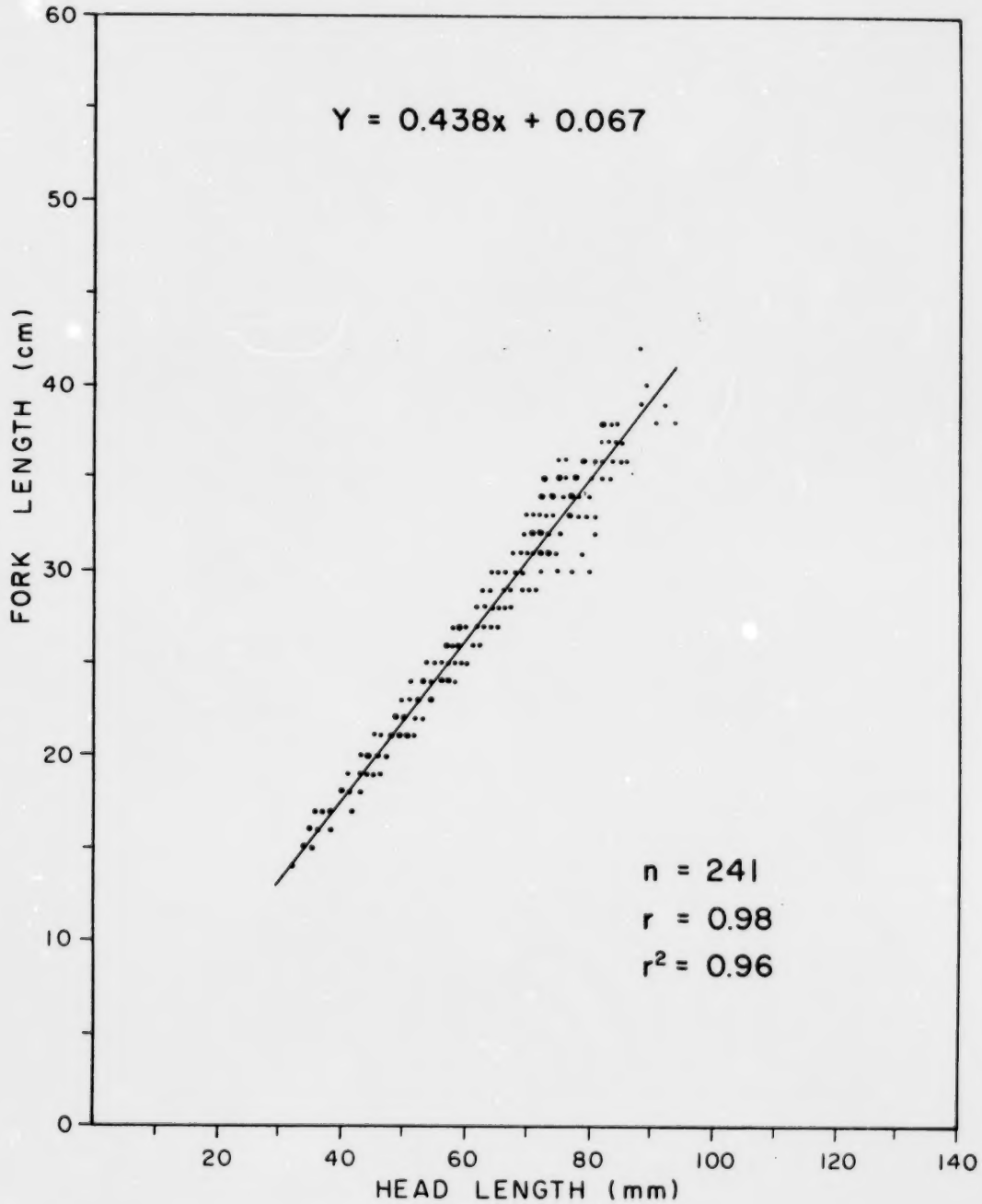


Fig. 5. Head length/fork length relationship for rock sole males in Hecate Strait, April 1-18, 1982.

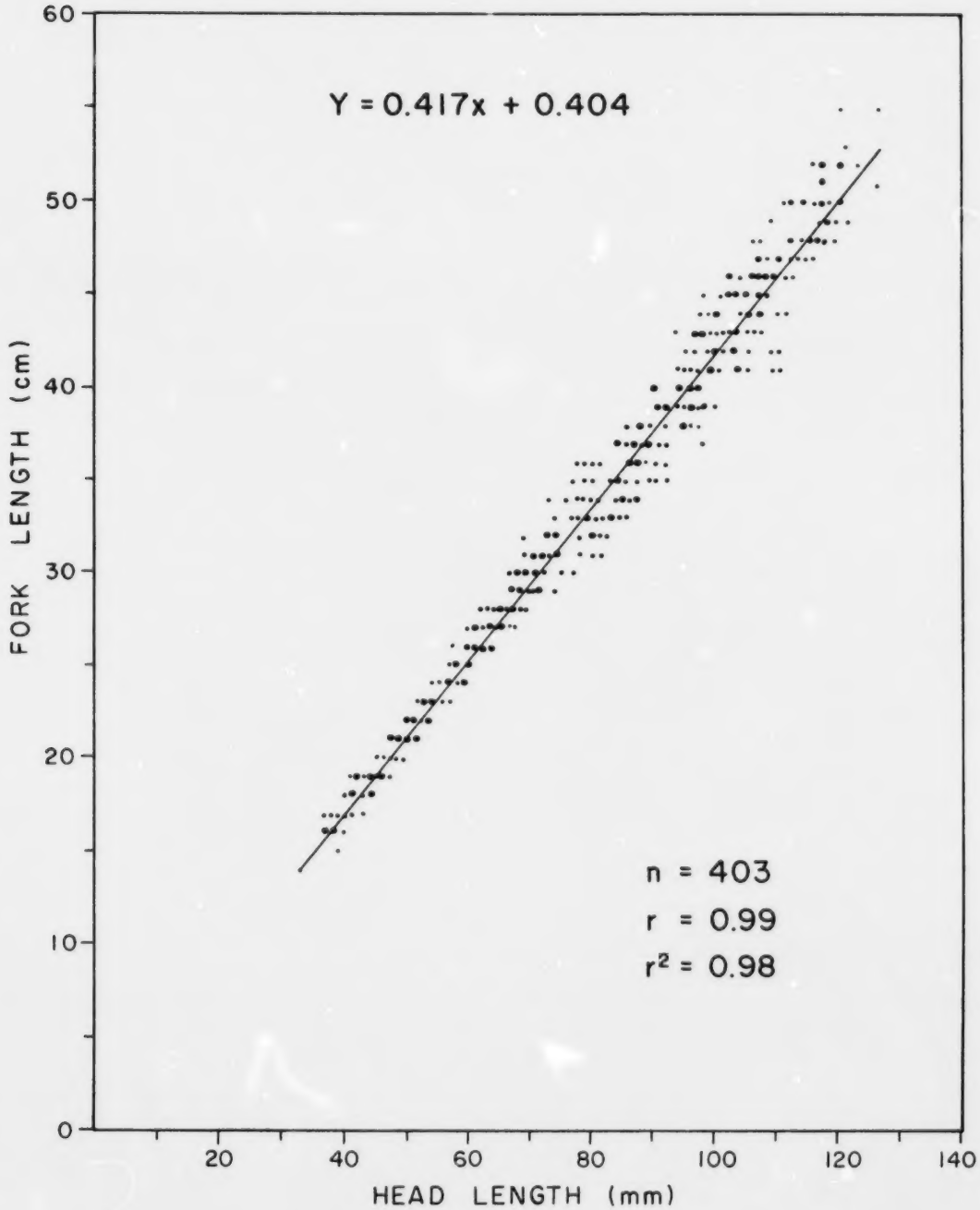


Fig. 6. Head length/fork length relationship for rock sole females in Hecate Strait, April 1-18, 1982.

APPENDIX TABLE 1. BRIDGE LOG FOR M/V NUCLEUS HECATE STRAIT SURVEY APRIL 1-18,1982 (SEE FOOTNOTES FOR EXPLANATION OF TERMS)

HAUL NUMBER		1	2	3	4
DATE		APR 3	APR 3	APR 3	APR 3
AREA (MAJOR, MINOR)		5C,02	5C,02	5C,02	5C,02
START TIME	(PST)	10:35	11:50	13:10	14:21
DURATION	(MIN)	30	30	25	26
START N. LAT.	(DEG)	52	52	52	52
	(MIN)	41.0	42.0	45.9	49.9
W. LONG.	(DEG)	130	130	130	130
	(MIN)	53.6	57.4	59.4	55.7
START LORAN-C	X	12412.9	12391.0	12356.0	12344.5
	Y	30356.6	30357.2	30367.3	30381.1
FINISH N. LAT.	(DEG)	52	52	52	52
	(MIN)	39.8	42.3	46.0	50.8
W. LONG.	(DEG)	130	130	130	130
	(MIN)	54.6	57.7	57.9	55.5
FINISH LORAN-C	X	12416.9	12387.9	12362.2	12339.2
	Y	30352.5	30357.9	30368.5	30383.8
HAUL DISTANCE	(KM)	2.4	0.7	1.7	1.7
	(N MI)	1.3	0.4	0.9	0.9
DIRECTION (DEG.TRUE)		0	0	20	330
BOTTOM DEPTH	(M)	88- 91	71- 73	42- 44	42- 44
	(FM)	48- 50	39- 40	23- 24	23- 24
MODAL DEPTH	(M)	90	72	43	43
WATER TEMP.	(DEG C)	6.9- 7.6	0.0- 0.0	0.0- 0.0	0.0- 0.0
TEMP. DEPTH	(M)	0- 98	0- ..	0- ..	0- ..
GEAR TYPE		106[a]	106	106	106
TOTAL CATCH	(KG)	24	100	12	109
REMARKS		USABLE	USABLE	FOULED	USABLE

[a]106 = 70' Gulf semi-balloon shrimp trawl.

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	1	2	3	4
DATE	APR 3	APR 3	APR 3	APR 3
AREA (MAJOR, MINOR)	5C,02	5C,02	5C,02	5C,02
BUTTER SOLE	..	..	..	..
CURLFIN SOLE	..	..	..	10
DOVER SOLE	..	..	..	..
ENGLISH SOLE	..	..	..	..
FLATHEAD SOLE	..	..	..	..
GREENLAND HALIBUT	..	..	..	..
PACIFIC HALIBUT	..	..	..	..
REX SOLE	..	..	..	..
ROCK SOLE	9	..	..	..
SAND SOLE	..	..	..	2
SPECKLED SANDDAB	..	..	..	..
STARRY FLOUNDER	..	..	..	..
OTHER FLATFISH	..	..	..	..
S. FLAVIDUS	..	..	..	..
S. MALIGER	..	5	..	..
S. PAUCISPINIS	..	5	..	..
S. PINNIGER	..	5	..	..
S. RUBERRIMUS	..	5	..	..
S. WILSONI	..	5	..	..
S. ZACENTRUS	..	5	..	..
OTHER ROCKFISH	..	..	..	..
KELP GREENLING	..	..	..	..
LINGCOD	..	10	..	..
PACIFIC COD	..	..	..	9
PACIFIC SAND LANCE	..	..	..	..
PACIFIC TOMCOD	..	..	..	..
SABLEFISH	..	..	..	..
SHINER PERCH	..	..	..	..
WALLEYE POLLOCK	..	..	..	..
OTHER ROUNDFISH	..	..	..	..
BIG SKATE	..	..	..	..
RATFISH	3	..	10	88
SPINY DOGFISH	..	3	..	..
OTHER SELACHII	..	..	..	..
INVERTEBRATES	2	58	1	..
TOTAL CATCH (KG)	24	100	12	109

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER		5	6	7	8
DATE		APR 3	APR 3	APR 3	APR 3
AREA (MAJOR, MINOR)		5C,02	5C,02	5C,02	5C,02
START TIME	(PST)	15:40	16:40	18:32	19:30
DURATION	(MIN)	22	30	30	30
START N. LAT.	(DEG)	52	52	52	52
	(MIN)	48.0	47.5	57.5	57.3
W. LONG.	(DEG)	130	130	130	130
	(MIN)	50.3	47.4	41.5	44.3
START LORAN-C	X	12379.3	12394.5	12350.2	12339.9
	Y	30379.1	30379.5	30411.6	30409.2
FINISH N. LAT.	(DEG)	52	52	52	52
	(MIN)	48.1	48.6	57.1	56.5
W. LONG.	(DEG)	130	130	130	130
	(MIN)	52.5	47.9	44.8	43.3
FINISH LORAN-C	X	12369.7	12384.0	12339.3	12349.7
	Y	30377.0	30382.3	30408.3	30407.6
HAUL DISTANCE	(KM)	2.4	2.0	3.7	1.9
	(N MI)	1.3	1.1	2.0	1.0
DIRECTION (DEG.TRUE)		290	40	200	90
BOTTOM DEPTH	(M)	66- 59	77- 79	84- 62	62- 57
	(FM)	36- 32	42- 43	46- 34	34- 31
MODAL DEPTH	(M)	53	78	73	60
WATER TEMP.	(DEG C)	0.0- 0.0	7.9- 7.5	0.0- 0.0	0.0- 0.0
TEMP. DEPTH	(M)	0- ..	0- 78	0- ..	0- ..
GEAR TYPE		106	106	106	106
TOTAL CATCH	(KG)	49	50	150	150
REMARKS		USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	5	6	7	8
DATE	APR 3	APR 3	APR 3	APR 3
AREA (MAJOR, MINOR)	5C,02	5C,02	5C,02	5C,02
BUTTER SOLE	..	..	..	..
CURLFIN SOLE	..	..	..	..
DOVER SOLE	..	..	..	..
ENGLISH SOLE	..	..	..	..
FLATHEAD SOLE	..	..	..	..
GREENLAND HALIBUT	..	..	..	..
PACIFIC HALIBUT	..	5	14	10
REX SOLE	..	..	..	..
ROCK SOLE	7	10	19	20
SAND SOLE	..	..	..	..
SPECKLED SANDDAB	..	..	..	5
STARRY FLOUNDER	..	..	..	..
OTHER FLATFISH	..	..	..	..
S. FLAVIDUS	..	..	..	..
S. MALIGER	..	..	..	..
S. PAUCISPINIS	..	..	..	..
S. PINNIGER	..	..	..	..
S. RUBERRIMUS	..	..	..	..
S. WILSONI	..	..	..	..
S. ZACENTRUS	..	..	..	..
OTHER ROCKFISH	..	..	..	..
KELP GREENLING	..	..	..	..
LINGCOD	..	..	..	..
PACIFIC COD	..	..	51	32
PACIFIC SAND LANCE	2	..	..	..
PACIFIC TOMCOD	..	..	..	..
SABLEFISH	..	..	..	..
SHINER PERCH	..	..	17	5
WALLEYE POLLOCK	..	..	..	..
OTHER ROUNDFISH	..	..	..	..
BIG SKATE	..	15	..	15
RATFISH	26	..	8	16
SPINY DOGFISH	..	..	..	..
OTHER SELACHII	..	..	..	..
INVERTEBRATES	14	14	25	5
TOTAL CATCH (KG)	49	50	150	150

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER		9	10	11	12
DATE		APR 4	APR 4	APR 4	APR 4
AREA (MAJOR, MINOR)		5C,02	5C,02	5C,02	5C,02
START TIME	(PST)	6:40	8:22	9:58	10:58
DURATION	(MIN)	34	30	31	31
START N. LAT.	(DEG)	52	52	53	53
	(MIN)	55.8	48.9	1.2	1.4
W. LONG.	(DEG)	130	130	130	130
	(MIN)	50.4	44.0	55.0	57.6
START LORAN-C	X	12325.3	12399.0	12269.1	12257.3
	Y	30401.0	30385.7	30412.9	30411.7
FINISH N. LAT.	(DEG)	52	52	53	52
	(MIN)	57.3	49.5	1.8	55.6
W. LONG.	(DEG)	130	130	130	130
	(MIN)	50.3	42.2	56.9	41.5
FINISH LORAN-C	X	12315.3	12402.5	12257.3	12363.4
	Y	30405.3	30388.6	30413.3	30406.3
HAUL DISTANCE	(KM)	2.8	2.2	2.4	20.9
	(N MI)	1.5	1.2	1.3	11.3
DIRECTION (DEG.TRUE)		360	270	255	205
BOTTOM DEPTH	(M)	48- 51	106- 102	33- 33	33- 29
	(FM)	26- 28	58- 56	18- 18	18- 16
MODAL DEPTH	(M)	50	104	33	31
WATER TEMP.	(DEG C)	0.0- 0.0	0.0- 0.0	0.0- 0.0	0.0- 0.0
TEMP. DEPTH	(M)	0- ..	0- ..	0- ..	0- ..
GEAR TYPE		106	106	106	106
TOTAL CATCH	(KG)	243	250	50	120
REMARKS		USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	9	10	11	12
DATE	APR 4	APR 4	APR 4	APR 4
AREA (MAJOR, MINOR)	5C,02	5C,02	5C,02	5C,02
BUTTER SOLE	1	..	..	..
CURLFIN SOLE	..	..	..	..
DOVER SOLE	..	2	..	..
ENGLISH SOLE	31	52	..	..
FLATHEAD SOLE	..	1	..	..
GREENLAND HALIBUT	..	9	..	..
PACIFIC HALIBUT	3	..	17	5
REX SOLE	..	31	1	..
ROCK SOLE	2	..	5	10
SAND SOLE	..	..	..	..
SPECKLED SANDDAB	..	5	..	..
STARRY FLOUNDER	..	..	..	..
OTHER FLATFISH	..	1	..	..
S. FLAVIDUS	..	..	..	..
S. MALIGER	..	..	..	..
S. PAUCISPINIS	..	..	..	..
S. PINNIGER	..	..	..	..
S. RUBERRIMUS	..	..	..	..
S. WILSONI	..	..	..	..
S. ZACENTRUS	..	..	..	..
OTHER ROCKFISH	..	..	..	..
KELP GREENLING	..	..	..	..
LINGCOD	..	..	..	..
PACIFIC COD	12	..	..	6
PACIFIC SAND LANCE	..	..	..	..
PACIFIC TOMCOD	..	..	..	..
SABLEFISH	..	T	..	..
SHINER PERCH	10	..	..	..
WALLEYE POLLOCK	..	5	..	..
OTHER ROUNDFISH	..	..	..	..
BIG SKATE	..	..	..	..
RATFISH	182	83	..	16
SPINY DOGFISH	..	..	..	..
OTHER SELACHII	..	..	..	..
INVERTEBRATES	..	3	4	83
TOTAL CATCH (KG)	243	250	50	120

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER		13	14	15	16
DATE		APR 4	APR 4	APR 4	APR 4
AREA (MAJOR, MINOR)		5C,02	5C,02	5C,02	5C,02
START TIME	(PST)	12:40	13:56	15:23	16:20
DURATION	(MIN)	31	20	24	5
START N. LAT.	(DEG)	53	53	53	53
	(MIN)	5.0	6.0	3.2	2.1
W. LONG.	(DEG)	130	130	131	131
	(MIN)	54.5	59.3	5.6	8.7
START LORAN-C	X	12244.2	12218.1	12213.5	12209.4
	Y	30423.4	30422.0	30411.5	30406.6
FINISH N. LAT.	(DEG)	53	53	53	53
	(MIN)	5.7	4.9	2.2	1.7
W. LONG.	(DEG)	130	131	131	131
	(MIN)	56.7	1.6	8.0	9.0
FINISH LORAN-C	X	12230.5	12216.9	12211.3	12211.0
	Y	30423.9	30418.6	30407.3	30405.3
HAUL DISTANCE	(KM)	2.8	3.3	3.3	0.7
	(N MI)	1.5	1.8	1.8	0.4
DIRECTION (DEG.TRUE)		330	215	240	205
BOTTOM DEPTH	(M)	73- 77	59- 55	40- 33	35- 35
	(FM)	40- 42	32- 30	22- 18	19- 19
MODAL DEPTH	(M)	75	57	37	35
WATER TEMP.	(DEG C)	7.6- 7.2	0.0- 0.0	0.0- 0.0	0.0- 0.0
TEMP. DEPTH	(M)	0- 75	0- ..	0- ..	0- ..
GEAR TYPE		106	106	106	106
TOTAL CATCH	(KG)	450	222	75	0
REMARKS		USABLE	USABLE	USABLE	SNAG-UN

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	13	14	15	16
DATE	APR 4	APR 4	APR 4	APR 4
AREA (MAJOR, MINOR)	5C,02	5C,02	5C,02	5C,02
BUTTER SOLE	2	..	..	..
CURLFIN SOLE	..	..	..	..
DOVER SOLE	..	..	..	..
ENGLISH SOLE	250	23	168	..
FLATHEAD SOLE	..	..	..	..
GREENLAND HALIBUT	..	..	..	..
PACIFIC HALIBUT	23	5	7	..
REX SOLE	..	..	..	..
ROCK SOLE	3	5	6	..
SAND SOLE	..	..	..	..
SPECKLED SANDDAB	35	..	..	..
STARRY FLOUNDER	..	..	..	..
OTHER FLATFISH	..	..	..	..
S. FLAVIDUS	..	..	..	..
S. MALIGER	..	..	..	..
S. PAUCISPINIS	..	..	..	..
S. PINNIGER	..	..	..	..
S. RUBERRIMUS	..	..	..	..
S. WILSONI	..	..	..	..
S. ZACENTRUS	..	..	..	..
OTHER ROCKFISH	..	..	..	..
KELP GREENLING	..	..	..	..
LINGCOD	20	..	..	..
PACIFIC COD	..	..	3	..
PACIFIC SAND LANCE	..	..	..	..
PACIFIC TOMCOD	..	..	..	..
SABLEFISH	..	..	..	..
SHINER PERCH	..	..	..	..
WALLEYE POLLOCK	..	..	..	..
OTHER ROUNDFISH	..	..	..	..
BIG SKATE	..	..	..	..
RATFISH	..	72	6	..
SPINY DOGFISH	..	..	..	..
OTHER SELACHII	..	..	..	..
INVERTEBRATES	250	117	..	..
TOTAL CATCH (KG)	450	222	75	0

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER		17	18	19	20
DATE		APR 4	APR 4	APR 4	APR 5
AREA (MAJOR, MINOR)		5C,02	5C,02	5C,02	5C,02
START TIME	(PST)	17:30	18:19	19:21	0:58
DURATION	(MIN)	28	26	22	56
START N. LAT.	(DEG)	53	53	53	52
	(MIN)	1.9	2.2	0.8	58.4
W. LONG.	(DEG)	131	131	131	131
	(MIN)	8.5	6.5	2.4	35.8
START LORAN-C	X	12211.5	12217.0	12242.7	12137.3
	Y	30406.2	30408.2	30407.1	30380.3
FINISH N. LAT.	(DEG)	53	53	53	52
	(MIN)	2.4	1.4	1.3	59.1
W. LONG.	(DEG)	131	131	131	131
	(MIN)	7.9	5.0	4.3	36.3
FINISH LORAN-C	X	12210.3	12228.4	12231.8	12130.8
	Y	30407.9	30407.0	30407.2	30381.9
HAUL DISTANCE	(KM)	1.1	2.2	2.4	4.5
	(N MI)	0.6	1.2	1.3	2.8
DIRECTION (DEG.TRUE)		335	80	280	0
BOTTOM DEPTH	(M)	35- 33	31- 29	35- 35	106- 102
	(FM)	19- 18	17- 16	19- 19	58- 56
MODAL DEPTH	(M)	34	30	35	104
WATER TEMP.	(DEG C)	0.0- 0.0	0.0- 0.0	0.0- 0.0	7.0- 7.3
TEMP. DEPTH	(M)	0- ..	0- ..	0- ..	0- 65
GEAR TYPE		106	106	106	106
TOTAL CATCH	(KG)	70	90	110	1000
REMARKS		USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	17	18	19	20
DATE	APR 4	APR 4	APR 4	APR 5
AREA (MAJOR, MINOR)	5C,02	5C,02	5C,02	5C,02
BUTTER SOLE	..	..	..	..
CURLFIN SOLE	2	2	..	..
DOVER SOLE	..	..	..	1
ENGLISH SOLE	1	..	..	83
FLATHEAD SOLE	..	..	..	..
GREENLAND HALIBUT	..	..	..	..
PACIFIC HALIBUT	..	1	11	..
REX SOLE	..	..	..	..
ROCK SOLE	17	18	18	5
SAND SOLE	6	5	5	..
SPECKLED SANDDAB	..	..	..	4
STARRY FLOUNDER	..	..	..	..
OTHER FLATFISH	..	..	..	..
S. FLAVIDUS	..	..	..	..
S. MALIGER	..	2	..	..
S. PAUCISPINIS	..	..	..	..
S. PINNIGER	..	..	..	..
S. RUBERRIMUS	..	..	..	..
S. WILSONI	..	..	..	..
S. ZACENTRUS	..	..	..	..
OTHER ROCKFISH	..	..	..	..
KELP GREENLING	..	..	..	..
LINGCOD	10	..	..	..
PACIFIC COD	..	6	10	17
PACIFIC SAND LANCE	..	..	..	..
PACIFIC TOMCOD	..	..	..	..
SABLEFISH	..	..	..	T
SHINER PERCH	10	..	..	..
WALLEYE POLLOCK	..	..	..	187
OTHER ROUNDFISH	..	..	..	..
BIG SKATE	..	..	..	..
RATFISH	..	..	27	36
SPINY DOGFISH	20	..	5	..
OTHER SELACHII	..	..	..	..
INVERTEBRATES	..	50	..	..
TOTAL CATCH (KG)	70	90	110	1000

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER		21	22	23	24
DATE		APR 5	APR 5	APR 5	APR 6
AREA (MAJOR, MINOR)		5C,02	5C,02	5C,02	5D,05
START TIME	(PST)	8:30	10:27	13:10	0:22
DURATION	(MIN)	25	20	26	26
START N. LAT.	(DEG)	52	52	52	53
	(MIN)	54.8	51.2	49.5	42.1
W. LONG.	(DEG)	131	131	131	130
	(MIN)	18.3	15.1	4.0	34.5
START LORAN-C	X	12224.2	12260.7	12314.6	12051.1
	Y	30380.8	30372.8	30374.8	30528.1
FINISH N. LAT.	(DEG)	52	52	52	53
	(MIN)	54.1	50.7	49.7	42.7
W. LONG.	(DEG)	131	131	131	130
	(MIN)	19.8	16.2	2.4	35.0
FINISH LORAN-C	X	12223.5	12259.0	12319.4	12044.3
	Y	30378.0	30370.7	30376.3	30529.1
HAUL DISTANCE	(KM)	2.0	1.5	1.9	1.3
	(N MI)	1.1	0.8	1.0	0.7
DIRECTION (DEG.TRUE)		200	190	35	0
BOTTOM DEPTH	(M)	59- 60	55- 55	38- 35	40- 48
	(FM)	32- 33	30- 30	21- 19	22- 26
MODAL DEPTH	(M)	60	55	37	44
WATER TEMP.	(DEG C)	0.0- 0.0	0.0- 0.0	0.0- 0.0	0.0- 0.0
TEMP. DEPTH	(M)	0- ..	0- ..	0- ..	0- ..
GEAR TYPE		106	106	106	106
TOTAL CATCH	(KG)	100	200	20	50
REMARKS		SNAG-UN	USABLE	TORN-USE	USABLE

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	21	22	23	24
DATE	APR 5	APR 5	APR 5	APR 6
AREA (MAJOR, MINOR)	5C,02	5C,02	5C,02	5D,05
BUTTER SOLE	..	..	..	..
CURLFIN SOLE	..	2	..	..
DOVER SOLE	..	..	..	..
ENGLISH SOLE	1	1	..	..
FLATHEAD SOLE	..	..	..	..
GREENLAND HALIBUT	..	..	..	..
PACIFIC HALIBUT	..	..	5	3
REX SOLE	..	..	..	..
ROCK SOLE	18	23	..	31
SAND SOLE	..	2	..	..
SPECKLED SANDDAB	..	..	..	..
STARRY FLOUNDER	..	..	..	..
OTHER FLATFISH	..	..	..	..
S. FLAVIDUS	..	7	..	..
S. MALIGER	..	9	..	..
S. PAUCISPINIS	..	..	..	..
S. PINNIGER	..	..	..	..
S. RUBERRIMUS	..	..	..	..
S. WILSONI	..	..	..	..
S. ZACENTRUS	..	..	..	..
OTHER ROCKFISH	..	..	..	..
KELP GREENLING	1	..	..	..
LINGCOD	..	..	..	..
PACIFIC COD	44	..	..	..
PACIFIC SAND LANCE	..	..	..	..
PACIFIC TOMCOD	..	..	..	..
SABLEFISH	..	..	..	..
SHINER PERCH	4	100	..	..
WALLEYE POLLOCK	..	..	..	..
OTHER ROUNDFISH	..	..	..	..
BIG SKATE	..	..	..	..
RATFISH	19	34	12	..
SPINY DOGFISH	..	..	..	..
OTHER SELACHII	..	..	..	..
INVERTEBRATES	1	..	..	..
TOTAL CATCH (KG)	100	200	20	50

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER		25	26	27	28
DATE		APR 6	APR 6	APR 6	APR 6
AREA (MAJOR, MINOR)		5D,05	5C,06	5C,02	5C,02
START TIME	(PST)	0:42	12:43	14:18	15:14
DURATION	(MIN)	42	30	32	25
START N. LAT.	(DEG)	53	53	53	53
	(MIN)	37.0	21.4	17.5	14.7
W. LONG.	(DEG)	130	130	131	131
	(MIN)	48.2	59.3	5.5	5.6
START LORAN-C	X	12032.8	12106.3	12111.1	12131.1
	Y	30507.1	30462.4	30448.6	30441.5
FINISH N. LAT.	(DEG)	53	53	53	53
	(MIN)	36.8	19.8	15.6	15.5
W. LONG.	(DEG)	130	131	131	131
	(MIN)	47.3	0.8	3.0	6.2
FINISH LORAN-C	X	12038.1	12112.2	12134.5	12123.0
	Y	30507.2	30457.4	30445.5	30443.1
HAUL DISTANCE	(KM)	1.1	3.3	4.4	1.7
	(N MI)	0.6	1.8	2.4	0.9
DIRECTION (DEG.TRUE)		0	160	160	290
BOTTOM DEPTH	(M)	77- 77	88- 90	62- 59	44- 44
	(FM)	42- 42	48- 49	34- 32	24- 24
MODAL DEPTH	(M)	77	89	61	44
WATER TEMP.	(DEG C)	7.2- 7.1	0.0- 0.0	0.0- 0.0	0.0- 0.0
TEMP. DEPTH	(M)	0- 74	0- ..	0- ..	0- ..
GEAR TYPE		106	106	106	106
TOTAL CATCH	(KG)	1200	175	110	55
REMARKS		USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	25	26	27	28
DATE	APR 6	APR 6	APR 6	APR 6
AREA (MAJOR, MINOR)	5D,05	5C,06	5C,02	5C,02
BUTTER SOLE	..	..	..	..
CURLFIN SOLE	..	..	..	..
DOVER SOLE	..	..	..	..
ENGLISH SOLE	8	38	16	..
FLATHEAD SOLE	..	..	..	..
GREENLAND HALIBUT	..	..	..	..
PACIFIC HALIBUT	..	..	5	9
REX SOLE	..	..	..	..
ROCK SOLE	38	2	3	23
SAND SOLE	..	..	..	..
SPECKLED SANDDAB	..	15	..	..
STARRY FLOUNDER	..	..	..	..
OTHER FLATFISH	..	..	..	..
S. FLAVIDUS	..	..	..	..
S. MALIGER	..	..	..	..
S. PAUCISPINIS	..	..	..	..
S. PINNIGER	..	..	..	..
S. RUBERRIMUS	..	..	..	..
S. WILSONI	..	..	..	..
S. ZACENTRUS	..	..	..	..
OTHER ROCKFISH	..	..	..	..
KELP GREENLING	..	..	..	..
LINGCOD	..	..	..	..
PACIFIC COD	..	2	4	1
PACIFIC SAND LANCE	..	..	..	..
PACIFIC TOMCOD	..	..	..	..
SABLEFISH	50	..	..	..
SHINER PERCH	..	10	20	3
WALLEYE POLLOCK	..	6	..	..
OTHER ROUNDFISH	..	..	6	..
BIG SKATE	..	..	..	..
RATFISH	..	..	13	..
SPINY DOGFISH	1100	..	..	5
OTHER SELACHII	..	..	..	..
INVERTEBRATES	..	90	40	5
TOTAL CATCH (KG)	1200	175	110	55

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER		29	30	31	32
DATE		APR 6	APR 7	APR 7	APR 7
AREA (MAJOR, MINOR)		5C,02	5D,05	5D,05	5D,01
START TIME	(PST)	16:03	7:22	8:44	10:14
DURATION	(MIN)	29	22	25	35
START N. LAT.	(DEG)	53	53	53	53
	(MIN)	16.2	37.9	35.5	29.5
W. LONG.	(DEG)	131	131	131	131
	(MIN)	7.2	0.8	7.0	20.2
START LORAN-C	X	12114.1	11975.0	11970.8	11968.3
	Y	30444.3	30500.7	30491.1	30468.5
FINISH N. LAT.	(DEG)	53	53	53	53
	(MIN)	16.6	36.7	36.7	31.6
W. LONG.	(DEG)	131	131	131	131
	(MIN)	8.0	2.2	5.9	16.9
FINISH LORAN-C	X	12108.2	11979.8	11965.8	11964.2
	Y	30444.7	30497.0	30494.6	30475.6
HAUL DISTANCE	(KM)	1.1	2.8	2.6	5.4
	(N MI)	0.6	1.5	1.4	2.9
DIRECTION (DEG.TRUE)		230	210	40	210
BOTTOM DEPTH	(M)	38- 37	59- 48	49- 51	33- 29
	(FM)	21- 20	32- 26	27- 28	18- 16
MODAL DEPTH	(M)	38	54	50	31
WATER TEMP.	(DEG C)	0.0- 0.0	7.1- 7.0	0.0- 0.0	0.0- 0.0
TEMP.: DEPTH	(M)	0- ..	0- 48	0- ..	0- ..
GEAR TYPE		106	106	106	106
TOTAL CATCH	(KG)	35	50	255	80
REMARKS		USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	29	30	31	32
DATE	APR 6	APR 7	APR 7	APR 7
AREA (MAJOR, MINOR)	5C,02	5D,05	5D,05	5D,01
BUTTER SOLE	..	..	..	..
CURLFIN SOLE	..	..	..	..
DOVER SOLE	..	..	..	..
ENGLISH SOLE	..	..	..	..
FLATHEAD SOLE	..	..	..	..
GREENLAND HALIBUT	..	..	..	..
PACIFIC HALIBUT	4	5	7	8
REX SOLE	..	..	..	..
ROCK SOLE	23	35	41	4
SAND SOLE	1	..	..	..
SPECKLED SANDDAB	..	..	..	..
STARRY FLOUNDER	..	..	..	..
OTHER FLATFISH	..	..	..	..
S. FLAVIDUS	..	..	..	..
S. MALIGER	..	..	..	..
S. PAUCISPINIS	..	..	..	..
S. PINNIGER	..	..	..	..
S. RUBERRIMUS	..	..	..	..
S. WILSONI	..	..	..	..
S. ZACENTRUS	..	..	..	..
OTHER ROCKFISH	..	..	..	..
KELP GREENLING	..	..	..	..
LINGCOD	..	..	..	..
PACIFIC COD	..	..	..	..
PACIFIC SAND LANCE	..	..	..	..
PACIFIC TOMCOD	..	..	..	..
SABLEFISH	..	..	..	..
SHINER PERCH	1	..	..	..
WALLEYE POLLOCK	..	..	..	..
OTHER ROUNDFISH	..	..	..	..
BIG SKATE	..	..	..	..
RATFISH	..	2	3	..
SPINY DOGFISH	..	..	..	..
OTHER SELACHII	..	..	..	..
INVERTEBRATES	..	..	4	60
TOTAL CATCH (KG)	35	50	255	80

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER		33	34	35	36
DATE		APR 7	APR 7	APR 7	APR 7
AREA (MAJOR, MINOR)		5D,01	5D,01	5D,01	5D,01
START TIME	(PST)	11:26	0:20	15:24	17:10
DURATION	(MIN)	38	20	31	..
START N. LAT.	(DEG)	53	53	53	53
	(MIN)	31.5	25.6	32.2	36.1
W. LONG.	(DEG)	131	131	131	131
	(MIN)	13.4	11.6	16.8	13.3
START LORAN-C	X	11977.6	12028.4	11960.1	11943.1
	Y	30477.6	30464.7	30477.0	30488.4
FINISH N. LAT.	(DEG)	53	53	53	53
	(MIN)	31.0	26.8	30.9	35.4
W. LONG.	(DEG)	131	131	131	131
	(MIN)	12.0	11.7	14.3	12.7
FINISH LORAN-C	X	11986.5	12019.1	11978.8	11950.6
	Y	30477.3	30467.5	30475.6	30487.1
HAUL DISTANCE	(KM)	1.9	2.2	3.7	1.5
	(N MI)	1.0	1.2	2.0	0.8
DIRECTION (DEG.TRUE)		130	0	120	150
BOTTOM DEPTH	(M)	38- 37	37- 37	29- 33	40- 40
	(FM)	21- 20	20- 20	16- 18	22- 22
MODAL DEPTH	(M)	38	37	31	40
WATER TEMP.	(DEG C)	0.0- 0.0	0.0- 0.0	8.2- 7.0	0.0- 0.0
TEMP. DEPTH	(M)	0- ..	0- ..	0- 37	0- ..
GEAR TYPE		106	106	106	106
TOTAL CATCH	(KG)	85	400	190	110
REMARKS		USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	33	34	35	36
DATE	APR 7	APR 7	APR 7	APR 7
AREA (MAJOR, MINOR)	5D,01	5D,01	5D,01	5D,01
BUTTER SOLE	..	..	..	..
CURLFIN SOLE	..	2	..	2
DOVER SOLE	..	..	..	..
ENGLISH SOLE	..	..	..	3
FLATHEAD SOLE	..	..	..	..
GREENLAND HALIBUT	..	..	..	..
PACIFIC HALIBUT	11	..	22	3
REX SOLE	..	..	..	..
ROCK SOLE	5	40	13	36
SAND SOLE	1	2	6	1
SPECKLED SANDDAB	..	..	..	..
STARRY FLOUNDER	..	..	..	..
OTHER FLATFISH	..	..	..	..
S. FLAVIDUS	..	..	..	..
S. MALIGER	..	..	..	..
S. PAUCISPINIS	..	..	..	..
S. PINNIGER	..	..	..	..
S. RUBERRIMUS	..	..	..	..
S. WILSONI	..	..	..	..
S. ZACENTRUS	..	..	..	..
OTHER ROCKFISH	..	..	..	..
KELP GREENLING	..	..	..	..
LINGCOD	..	..	..	..
PACIFIC COD	9	69	24	28
PACIFIC SAND LANCE	..	2	2	10
PACIFIC TOMCOD	..	..	..	..
SABLEFISH	..	..	..	..
SHINER PERCH	..	..	..	..
WALLEYE POLLOCK	..	..	..	..
OTHER ROUNDFISH	..	..	..	..
BIG SKATE	..	..	..	..
RATFISH	..	42	7	..
SPINY DOGFISH	..	..	..	..
OTHER SELACHII	..	..	..	..
INVERTEBRATES	54	125	..	25
TOTAL CATCH (KG)	85	400	190	110

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER		37	38	39	40
DATE		APR 7	APR 8	APR 8	APR 8
AREA (MAJOR, MINOR)		5D,01	5D,05	5D,05	5D,05
START TIME	(PST)	19:23	11:30	14:32	15:45
DURATION	(MIN)	27	28	24	18
START N. LAT.	(DEG)	53	53	53	53
	(MIN)	37.0	40.8	47.0	46.6
W. LONG.	(DEG)	131	131	130	130
	(MIN)	16.3	14.6	57.3	59.8
START LORAN-C	X	11925.4	11902.4	11918.8	11912.3
	Y	30488.5	30498.2	30523.4	30520.8
FINISH N. LAT.	(DEG)	53	53	53	53
	(MIN)	36.5	41.2	45.8	45.7
W. LONG.	(DEG)	131	131	130	131
	(MIN)	15.0	17.1	56.0	..
FINISH LORAN-C	X	11933.9	11890.4	11933.3	11918.6
	Y	30488.2	30497.5	30521.6	30518.7
HAUL DISTANCE	(KM)	1.7	2.8	2.6	1.7
	(N MI)	0.9	1.5	1.4	0.9
DIRECTION (DEG.TRUE)		160	300	160	150
BOTTOM DEPTH	(M)	22- 20	44- 50	73- 71	59- 55
	(FM)	12- 11	24- 27	40- 39	32- 30
MODAL DEPTH	(M)	21	47	72	57
WATER TEMP.	(DEG C)	0.0- 0.0	7.1- 6.9	7.4- 7.1	0.0- 0.0
TEMP. DEPTH	(M)	0- ..	0- 50	0- 77	0- ..
GEAR TYPE		106	106	106	106
TOTAL CATCH	(KG)	100	150	140	100
REMARKS		USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	37	38	39	40
DATE	APR 7	APR 8	APR 8	APR 8
AREA (MAJOR, MINOR)	5D,01	5D,05	5D,05	5D,05
BUTTER SOLE	..	7	5	..
CURLFIN SOLE	..	..	..	..
DOVER SOLE	..	..	..	..
ENGLISH SOLE	..	48	84	..
FLATHEAD SOLE	..	..	..	..
GREENLAND HALIBUT	..	..	..	..
PACIFIC HALIBUT	52	3	..	6
REX SOLE	..	..	4	..
ROCK SOLE	14	20	16	22
SAND SOLE	2	7	..	..
SPECKLED SANDDAB	..	..	5	..
STARRY FLOUNDER	2	..	..	..
OTHER FLATFISH	..	..	..	..
S. FLAVIDUS	..	..	..	..
S. MALIGER	..	..	..	..
S. PAUCISPINIS	..	..	..	..
S. PINNIGER	..	..	..	..
S. RUBERRIMUS	..	..	..	..
S. WILSONI	..	..	..	..
S. ZACENTRUS	..	..	..	..
OTHER ROCKFISH	..	..	..	..
KELP GREENLING	..	..	..	..
LINGCOD	..	..	..	3
PACIFIC COD	6	..	12	..
PACIFIC SAND LANCE	..	..	..	..
PACIFIC TOMCOD	..	..	..	..
SABLEFISH	..	..	2	..
SHINER PERCH	..	..	1	..
WALLEYE POLLOCK	..	1	..	..
OTHER ROUNDFISH	..	..	..	..
BIG SKATE	..	5	..	10
RATFISH	1	..	..	..
SPINY DOGFISH	..	..	..	..
OTHER SELACHII	..	..	..	..
INVERTEBRATES	19	50	..	50
TOTAL CATCH (KG)	100	150	140	100

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER		41	42	43	44
DATE		APR 8	APR 8	APR 9	APR 9
AREA (MAJOR, MINOR)		5D,05	5D,05	5D,01	5D,01
START TIME	(PST)	16:55	18:30	7:09	8:32
DURATION	(MIN)	21	22	26	25
START N. LAT.	(DEG)	53	53	53	53
	(MIN)	47.4	49.7	43.0	43.0
W. LONG.	(DEG)	131	131	131	131
	(MIN)	1.6	10.0	24.4	24.0
START LORAN-C	X	11899.1	11849.7	11851.3	11852.7
	Y	30521.4	30520.9	30496.9	30497.2
FINISH N. LAT.	(DEG)	53	53	53	53
	(MIN)	48.2	48.5	43.9	42.4
W. LONG.	(DEG)	130	131	131	131
	(MIN)	59.5	9.8	18.0	23.0
FINISH LORAN-C	X	11900.9	11859.8	11866.4	11860.7
	Y	30524.5	30518.4	30502.0	30496.5
HAUL DISTANCE	(KM)	2.8	2.2	7.2	1.5
	(N MI)	1.5	1.2	3.9	0.8
DIRECTION (DEG.TRUE)		30	155	305	165
BOTTOM DEPTH	(M)	51- 59	48- 48	37- 40	18- 20
	(FM)	28- 32	26- 26	20- 22	10- 11
MODAL DEPTH	(M)	55	48	39	19
WATER TEMP.	(DEG C)	0.0- 0.0	0.0- 0.0	0.0- 0.0	0.0- 0.0
TEMP. DEPTH	(M)	0- ..	0- ..	0- ..	0- ..
GEAR TYPE		106	106	106	106
TOTAL CATCH	(KG)	65	230	145	75
REMARKS		USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	41	42	43	44
DATE	APR 8	APR 8	APR 9	APR 9
AREA (MAJOR, MINOR)	5D,05	5D,05	5D,01	5D,01
BUTTER SOLE	..	..	..	..
CURLFIN SOLE	3	..	..	..
DOVER SOLE	..	..	..	..
ENGLISH SOLE	5	..	6	..
FLATHEAD SOLE	..	..	..	..
GREENLAND HALIBUT	..	..	..	..
PACIFIC HALIBUT	14	11	40	15
REX SOLE	..	..	..	..
ROCK SOLE	29	20	61	4
SAND SOLE	..	..	16	4
SPECKLED SANDDAB	..	..	..	..
STARRY FLOUNDER	..	..	..	..
OTHER FLATFISH	..	..	..	..
S. FLAVIDUS	..	..	..	..
S. MALIGER	..	37	3	..
S. PAUCISPINIS	..	..	..	..
S. PINNIGER	..	..	..	..
S. RUBERRIMUS	..	..	..	..
S. WILSONI	..	..	..	..
S. ZACENTRUS	..	..	..	..
OTHER ROCKFISH	..	..	..	..
KELP GREENLING	..	..	..	..
LINGCOD	2	..	..	..
PACIFIC COD	..	3	12	..
PACIFIC SAND LANCE	..	..	..	..
PACIFIC TOMCOD	..	..	..	..
SABLEFISH	..	..	..	..
SHINER PERCH	..	..	..	..
WALLEYE POLLOCK	..	..	..	..
OTHER ROUNDFISH	..	..	..	..
BIG SKATE	..	..	..	..
RATFISH	..	34	..	..
SPINY DOGFISH	..	..	..	..
OTHER SELACHII	..	..	..	..
INVERTEBRATES	1	120	..	50
TOTAL CATCH (KG)	65	230	145	75

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER		45	46	47	48
DATE		APR 9	APR 9	APR 9	APR 9
AREA (MAJOR, MINOR)		5D,01	5D,01	5D,01	5D,04
START TIME	(PST)	10:21	11:26	13:14	15:39
DURATION	(MIN)	15	13	5	..
START N. LAT.	(DEG)	53	53	53	53
	(MIN)	48.1	51.7	54.9	55.9
W. LONG.	(DEG)	131	131	131	131
	(MIN)	27.5	23.8	25.7	6.4
START LORAN-C	X	11801.6	11785.8	11754.3	11813.8
	Y	30506.2	30516.3	30521.9	30536.4
FINISH N. LAT.	(DEG)	53	53	53	53
	(MIN)	48.8	51.2	54.7	56.3
W. LONG.	(DEG)	131	131	131	131
	(MIN)	28.0	24.5	25.5	8.2
FINISH LORAN-C	X	11794.5	11787.4	11756.6	11803.9
	Y	30507.4	30514.8	30521.6	30536.1
HAUL DISTANCE	(KM)	1.5	1.3	0.4	2.0
	(N MI)	0.8	0.7	0.2	1.1
DIRECTION (DEG.TRUE)		345	185	190	305
BOTTOM DEPTH	(M)	18- 22	27- 27	26- 26	59- 53
	(FM)	10- 12	15- 15	14- 14	32- 29
MODAL DEPTH	(M)	20	27	26	56
WATER TEMP.	(DEG C)	6.9- 7.0	0.0- 0.0	0.0- 0.0	0.0- 0.0
TEMP. DEPTH	(M)	0- 25	0- ..	0- ..	0- ..
GEAR TYPE		106	106	106	106
TOTAL CATCH	(KG)	70	..	..	90
REMARKS		USABLE	SNAG-UN	SNAG-UN	USABLE

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	45	46	47	48
DATE	APR 9	APR 9	APR 9	APR 9
AREA (MAJOR, MINOR)	5D,01	5D,01	5D,01	5D,04
BUTTER SOLE	..	..	..	..
CURLFIN SOLE	..	..	..	3
DOVER SOLE	..	..	..	..
ENGLISH SOLE	..	..	..	3
FLATHEAD SOLE	..	..	..	..
GREENLAND HALIBUT	..	..	..	..
PACIFIC HALIBUT	1	..	16	33
REX SOLE	..	..	..	..
ROCK SOLE	2	2	..	36
SAND SOLE	..	..	..	4
SPECKLED SANDDAB	..	..	..	..
STARRY FLOUNDER	4	..	..	..
OTHER FLATFISH	..	..	..	..
S. FLAVIDUS	..	..	..	..
S. MALIGER	1	..	..	..
S. PAUCISPINIS	..	..	..	..
S. PINNIGER	..	..	..	..
S. RUBERRIMUS	..	..	..	..
S. WILSONI	..	..	..	..
S. ZACENTRUS	..	..	..	..
OTHER ROCKFISH	..	..	..	..
KELP GREENLING	..	..	..	..
LINGCOD	..	..	..	2
PACIFIC COD	..	..	..	..
PACIFIC SAND LANCE	..	..	..	..
PACIFIC TOMCOD	..	..	..	..
SABLEFISH	..	..	..	..
SHINER PERCH	..	..	..	..
WALLEYE POLLOCK	..	..	..	..
OTHER ROUNDFISH	..	..	..	1
BIG SKATE	..	..	..	..
RATFISH	..	..	..	..
SPINY DOGFISH	1	..	..	..
OTHER SELACHII	..	..	..	..
INVERTEBRATES	1	120	..	5
TOTAL CATCH (KG)	70	..	..	90

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER		49	50	51	52
DATE		APR 9	APR 9	APR 10	APR 10
AREA (MAJOR, MINOR)		5D,04	5D,04	5D,04	5D,04
START TIME	(PST)	17:00	17:54	10:52	11:28
DURATION	(MIN)	25	30	28	25
START N. LAT.	(DEG)	54	54	54	54
	(MIN)	0.5	1.0	2.6	5.4
W. LONG.	(DEG)	131	131	130	131
	(MIN)	7.3	5.6	59.0	5.5
START LORAN-C	X	11773.5	11775.8	11787.8	11740.5
	Y	30545.4	30547.5	30555.1	30556.4
FINISH N. LAT.	(DEG)	54	54	54	54
	(MIN)	0.6	2.1	1.3	6.4
W. LONG.	(DEG)	131	131	130	131
	(MIN)	7.6	4.3	58.9	6.0
FINISH LORAN-C	X	11771.6	11771.7	11798.7	11730.5
	Y	30545.4	30550.6	30552.5	30558.1
HAUL DISTANCE	(KM)	0.4	2.4	2.4	1.9
	(N MI)	0.2	1.3	1.3	1.0
DIRECTION (DEG.TRUE)		320	360	140	350
BOTTOM DEPTH	(M)	37- 37	33- 27	70- 70	37- 33
	(FM)	20- 20	18- 15	38- 38	20- 18
MODAL DEPTH	(M)	37	30	70	35
WATER TEMP.	(DEG C)	0.0- 0.0	0.0- 0.0	7.1-7.0	0.0- 0.0
TEMP. DEPTH	(M)	0- ..	0- ..	0- 76	0- ..
GEAR TYPE		106	106	106	106
TOTAL CATCH	(KG)	135	325	100	210
REMARKS		USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	49	50	51	52
DATE	APR 9	APR 9	APR 10	APR 10
AREA (MAJOR, MINOR)	5D,04	5D,04	5D,04	5D,04
BUTTER SOLE	..	..	..	..
CURLFIN SOLE	..	..	..	..
DOVER SOLE	..	..	..	..
ENGLISH SOLE	..	..	2	..
FLATHEAD SOLE	..	..	..	..
GREENLAND HALIBUT	..	..	..	..
PACIFIC HALIBUT	10	41	1	3
REX SOLE	..	..	..	..
ROCK SOLE	49	74	34	13
SAND SOLE	9	12	..	28
SPECKLED SANDDAB	..	..	1	..
STARRY FLOUNDER	..	..	..	10
OTHER FLATFISH	..	..	..	..
S. FLAVIDUS	..	..	..	..
S. MALIGER	..	..	1	..
S. PAUCISPINIS	..	..	..	..
S. PINNIGER	..	..	..	..
S. RUBERRIMUS	..	..	..	..
S. WILSONI	..	..	..	..
S. ZACENTRUS	..	..	..	..
OTHER ROCKFISH	..	..	..	..
KELP GREENLING	..	..	..	..
LINGCOD	..	..	..	..
PACIFIC COD	7	100	2	..
PACIFIC SAND LANCE	..	..	..	..
PACIFIC TOMCOD	..	..	..	..
SABLEFISH	..	..	..	..
SHINER PERCH	..	..	..	..
WALLEYE POLLOCK	..	..	1	..
OTHER ROUNDFISH	..	..	..	..
BIG SKATE	20	38	..	..
RATFISH	..	..	35	..
SPINY DOGFISH	..	..	..	..
OTHER SELACHII	..	..	..	..
INVERTEBRATES	31	50	15	100
TOTAL CATCH (KG)	135	325	100	210

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER		53	54	55	56
DATE		APR 10	APR 10	APR 10	APR 11
AREA (MAJOR, MINOR)		5D,04	5D,04	5D,04	5D,04
START TIME	(PST)	13:28	15:04	17:05	7:25
DURATION	(MIN)	..	28	22	23
START N. LAT.	(DEG)	54	54	54	54
	(MIN)	6.8	12.4	7.0	16.5
W. LONG.	(DEG)	131	131	131	130
	(MIN)	9.0	8.2	4.9	59.2
START LORAN-C	X	11716.3	11673.3	11729.7	11673.0
	Y	30556.9	30568.4	30559.0	30582.0
FINISH N. LAT.	(DEG)	54	54	54	54
	(MIN)	8.1	12.5	5.7	15.5
W. LONG.	(DEG)	131	131	131	131
	(MIN)	9.0	11.0	4.9	4.8
FINISH LORAN-C	X	11705.7	11662.4	11740.3	11660.1
	Y	30559.5	30566.8	30557.4	30576.5
HAUL DISTANCE	(KM)	2.4	3.0	2.4	4.3
	(N MI)	1.3	1.6	1.3	2.6
DIRECTION (DEG.TRUE)		340	330	170	300
BOTTOM DEPTH	(M)	37- 37	27- 29	106- 104	70- 73
	(FM)	20- 20	15- 16	58- 57	38- 40
MODAL DEPTH	(M)	37	28	105	72
WATER TEMP.	(DEG C)	0.0- 0.0	0.0- 0.0	0.0- 0.0	0.0- 0.0
TEMP. DEPTH	(M)	0- ..	0- ..	0- ..	0- ..
GEAR TYPE		106	106	106	106
TOTAL CATCH	(KG)	360	390	650	3500
REMARKS		USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	53	54	55	56
DATE	APR 10	APR 10	APR 10	APR 11
AREA (MAJOR, MINOR)	5D,04	5D,04	5D,04	5D,04
BUTTER SOLE	..	1	..	350
CURLFIN SOLE	..	..	..	..
DOVER SOLE	..	..	184	..
ENGLISH SOLE	..	2	77	2700
FLATHEAD SOLE	..	..	7	..
GREENLAND HALIBUT	..	..	222	20
PACIFIC HALIBUT	60	43	9	29
REX SOLE	..	..	125	..
ROCK SOLE	41	46	7	..
SAND SOLE	2	6	..	..
SPECKLED SANDDAB	..	..	..	..
STARRY FLOUNDER	..	6	..	..
OTHER FLATFISH	..	..	..	..
S. FLAVIDUS	..	..	..	..
S. MALIGER	..	..	..	..
S. PAUCISPINIS	..	..	..	..
S. PINNIGER	..	..	..	..
S. RUBERRIMUS	..	..	..	..
S. WILSONI	..	..	..	..
S. ZACENTRUS	..	..	..	..
OTHER ROCKFISH	..	..	..	..
KELP GREENLING	..	..	..	..
LINGCOD	..	..	..	2
PACIFIC COD	..	133	67	15
PACIFIC SAND LANCE	..	..	..	..
PACIFIC TOMCOD	..	..	2	..
SABLEFISH	..	..	..	..
SHINER PERCH	..	..	..	..
WALLEYE POLLOCK	..	..	..	..
OTHER ROUNDFISH	..	..	..	..
BIG SKATE	..	..	..	200
RATFISH	..	..	..	..
SPINY DOGFISH	..	..	..	..
OTHER SELACHII	..	..	..	..
INVERTEBRATES	250	..	..	..
TOTAL CATCH (KG)	360	390	650	3500

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER		57	58	59	60
DATE		APR 11	APR 11	APR 11	APR 11
AREA (MAJOR, MINOR)		5D,04	5D,04	5D,04	5D,04
START TIME	(PST)	8:10	9:39	10:44	11:50
DURATION	(MIN)	17	18	23	23
START N. LAT.	(DEG)	54	54	54	54
	(MIN)	15.2	17.8	15.3	12.5
W. LONG.	(DEG)	131	131	131	131
	(MIN)	7.8	15.4	11.0	12.2
START LORAN-C	X	11651.6	11603.3	11639.3	11658.2
	Y	30573.0	30574.0	30572.1	30566.0
FINISH N. LAT.	(DEG)	54	54	54	54
	(MIN)	15.7	17.7	14.1	12.9
W. LONG.	(DEG)	131	131	131	131
	(MIN)	6.5	14.3	14.3	12.0
FINISH LORAN-C	X	11652.2	11607.9	11637.7	11655.6
	Y	30575.8	30574.6	30567.7	30566.9
HAUL DISTANCE	(KM)	1.7	1.3	4.3	0.7
	(N MI)	0.9	0.7	2.3	0.4
DIRECTION (DEG.TRUE)		220	30	260	40
BOTTOM DEPTH	(M)	22- 22	64- 64	15- 22	26- 26
	(FM)	12- 12	35- 35	8- 12	14- 14
MODAL DEPTH	(M)	22	64	19	26
WATER TEMP.	(DEG C)	0.0- 0.0	0.0- 0.0	0.0- 0.0	0.0- 0.0
TEMP. DEPTH	(M)	0- ..	0- ..	0- ..	0- ..
GEAR TYPE		106	106	106	106
TOTAL CATCH	(KG)	550	80	450	100
REMARKS		USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	57	58	59	60
DATE	APR 11	APR 11	APR 11	APR 11
AREA (MAJOR, MINOR)	5D,04	5D,04	5D,04	5D,04
BUTTER SOLE	..	3	..	..
CURLFIN SOLE	..	..	..	..
DOVER SOLE	..	..	..	..
ENGLISH SOLE	..	7	..	..
FLATHEAD SOLE	..	..	..	..
GREENLAND HALIBUT	..	3	..	..
PACIFIC HALIBUT	33	13	17	4
REX SOLE	..	..	..	..
ROCK SOLE	49	..	47	16
SAND SOLE	9	..	12	9
SPECKLED SANDDAB	..	..	..	..
STARRY FLOUNDER	..	..	..	3
OTHER FLATFISH	..	..	..	..
S. FLAVIDUS	..	..	..	..
S. MALIGER	..	..	..	..
S. PAUCISPINIS	..	..	..	..
S. PINNIGER	..	..	..	..
S. RUBERRIMUS	..	..	..	..
S. WILSONI	..	..	..	..
S. ZACENTRUS	..	..	..	..
OTHER ROCKFISH	..	..	..	..
KELP GREENLING	..	..	..	..
LINGCOD	..	..	..	..
PACIFIC COD	396	40	378	37
PACIFIC SAND LANCE	..	..	..	..
PACIFIC TOMCOD	..	..	..	..
SABLEFISH	..	..	..	..
SHINER PERCH	..	..	..	..
WALLEYE POLLOCK	..	..	..	..
OTHER ROUNDFISH	..	..	..	..
BIG SKATE	..	..	..	20
RATFISH	..	..	..	..
SPINY DOGFISH	..	..	..	..
OTHER SELACHII	..	..	..	..
INVERTEBRATES	50	..	..	..
TOTAL CATCH (KG)	550	80	450	100

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER		61	62	63	64
DATE		APR 14	APR 14	APR 14	APR 14
AREA (MAJOR, MINOR)		5D,05	5C,02	5C,02	5C,02
START TIME	(PST)	0:27	14:19	16:56	20:30
DURATION	(MIN)	27	29	20	30
START N. LAT.	(DEG)	53	53	52	53
	(MIN)	33.2	2.2	51.8	1.8
W. LONG.	(DEG)	131	131	131	131
	(MIN)	0.4	7.9	13.4	7.0
START LORAN-C	X	12013.5	12211.7	12262.0	12217.9
	Y	30490.1	30407.3	30375.5	30406.8
FINISH N. LAT.	(DEG)	53	53	52	53
	(MIN)	33.8	1.5	51.9	2.2
W. LONG.	(DEG)	131	131	131	131
	(MIN)	0.4	7.8	11.5	7.0
FINISH LORAN-C	X	12008.9	12217.0	12269.4	12215.1
	Y	30491.5	30405.5	30376.9	30407.9
HAUL DISTANCE	(KM)	1.1	1.3	2.2	0.7
	(N MI)	0.6	0.7	1.2	0.4
DIRECTION (DEG.TRUE)		0	190	50	90
BOTTOM DEPTH	(M)	49- 49	37- 37	37- 44	33- 37
	(FM)	27- 27	20- 20	20- 24	18- 20
MODAL DEPTH	(M)	49	37	41	35
WATER TEMP.	(DEG C)	0.0- 0.0	0.0- 0.0	7.5- 7.3	0.0- 0.0
TEMP. DEPTH	(M)	0- ..	0- ..	0- 45	0- ..
GEAR TYPE		106	106	106	106
TOTAL CATCH	(KG)	79	75	170	205
REMARKS		USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	61	62	63	64
DATE	APR 14	APR 14	APR 14	APR 14
AREA (MAJOR, MINOR)	5D,05	5C,02	5C,02	5C,02
BUTTER SOLE	..	..	..	..
CURLFIN SOLE	..	..	..	..
DOVER SOLE	..	..	..	..
ENGLISH SOLE	..	1	..	32
FLATHEAD SOLE	..	..	..	..
GREENLAND HALIBUT	..	..	..	..
PACIFIC HALIBUT	..	12	..	74
REX SOLE	..	..	..	..
ROCK SOLE	12	46	77	90
SAND SOLE	..	4	5	5
SPECKLED SANDDAB	..	..	..	..
STARRY FLOUNDER	..	..	..	..
OTHER FLATFISH	..	..	..	..
S. FLAVIDUS	..	..	..	..
S. MALIGER	..	..	..	..
S. PAUCISPINIS	..	..	..	..
S. PINNIGER	..	..	..	..
S. RUBERRIMUS	..	..	..	..
S. WILSONI	..	..	..	..
S. ZACENTRUS	..	..	..	..
OTHER ROCKFISH	..	..	..	..
KELP GREENLING	5	..	..	..
LINGCOD	..	..	..	..
PACIFIC COD	..	3	1	..
PACIFIC SAND LANCE	..	1	15	..
PACIFIC TOMCOD	..	..	..	..
SABLEFISH	..	..	..	..
SHINER PERCH	..	3	20	..
WALLEYE POLLOCK	..	..	..	..
OTHER ROUNDFISH	..	..	..	..
BIG SKATE	..	..	..	..
RATFISH	..	..	32	3
SPINY DOGFISH	..	..	..	..
OTHER SELACHII	..	..	..	..
INVERTEBRATES	39	..	10	..
TOTAL CATCH (KG)	79	75	170	205

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER		65	66	67	68
DATE		APR 15	APR 15	APR 15	APR 15
AREA (MAJOR, MINOR)		5C,02	5C,02	5C,02	5C,02
START TIME	(PST)	7:41	9:35	10:44	11:54
DURATION	(MIN)	28	25	27	20
START N. LAT.	(DEG)	53	52	53	53
	(MIN)	1.4	59.9	3.6	1.5
W. LONG.	(DEG)	131	131	131	131
	(MIN)	24.0	10.0	5.2	1.2
START LORAN-C	X	12157.9	12219.9	12212.2	12242.5
	Y	30395.3	30399.8	30412.8	30409.7
FINISH N. LAT.	(DEG)	53	53	53	53
	(MIN)	2.1	0.7	3.4	0.9
W. LONG.	(DEG)	131	131	131	131
	(MIN)	22.2	8.4	3.6	0.4
FINISH LORAN-C	X	12159.4	12220.3	12219.7	12249.8
	Y	30398.2	30403.0	30413.3	30408.6
HAUL DISTANCE	(KM)	2.4	2.4	1.9	1.5
	(N MI)	1.3	1.3	1.0	0.8
DIRECTION (DEG.TRUE)		60	20	30	0
BOTTOM DEPTH	(M)	29- 33	29- 33	44- 55	37- 37
	(FM)	16- 18	16- 18	24- 30	20- 20
MODAL DEPTH	(M)	31	31	50	37
WATER TEMP.	(DEG C)	0.0- 0.0	0.0- 0.0	7.3- 0.0	7.2- 7.3
TEMP. DEPTH	(M)	0- ..	0- ..	0- ..	0- 37
GEAR TYPE		106	106	106	106
TOTAL CATCH	(KG)	45	25	1456	40
REMARKS		USABLE	USABLE	USABLE	USABLE

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	65	66	67	68
DATE	APR 15	APR 15	APR 15	APR 15
AREA (MAJOR, MINOR)	5C,02	5C,02	5C,02	5C,02
BUTTER SOLE	..	..	50	..
CURLFIN SOLE	2	..	..	..
DOVER SOLE	..	..	..	..
ENGLISH SOLE	..	..	152	8
FLATHEAD SOLE	..	..	..	..
GREENLAND HALIBUT	..	..	..	..
PACIFIC HALIBUT	..	..	..	4
REX SOLE	..	..	..	..
ROCK SOLE	36	9	..	9
SAND SOLE	3	1	..	..
SPECKLED SANDDAB	..	..	..	..
STARRY FLOUNDER	..	..	..	..
OTHER FLATFISH	..	..	..	..
S. FLAVIDUS	..	..	..	..
S. MALIGER	..	..	..	..
S. PAUCISPINIS	..	..	..	..
S. PINNIGER	..	..	..	..
S. RUBERRIMUS	..	..	..	..
S. WILSONI	..	..	..	..
S. ZACENTRUS	..	..	..	..
OTHER ROCKFISH	..	..	..	..
KELP GREENLING	..	..	..	..
LINGCOD	..	..	..	..
PACIFIC COD	..	11	..	6
PACIFIC SAND LANCE	..	..	..	..
PACIFIC TOMCOD	..	..	..	..
SABLEFISH	..	..	..	..
SHINER PERCH	..	..	..	10
WALLEYE POLLOCK	..	..	..	..
OTHER ROUNDFISH	..	..	..	..
BIG SKATE	..	..	..	..
RATFISH	..	2	..	..
SPINY DOGFISH	..	..	..	..
OTHER SELACHII	..	..	..	..
INVERTEBRATES	..	..	..	2
TOTAL CATCH (KG)	45	25	1456	40

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER	69	70
DATE	APR 15	APR 15
AREA (MAJOR, MINOR)	5C,02	5C,02
BUTTER SOLE	..	..
CURLFIN SOLE	..	..
DOVER SOLE	..	..
ENGLISH SOLE	7	..
FLATHEAD SOLE	..	..
GREENLAND HALIBUT	..	..
PACIFIC HALIBUT	25	15
REX SOLE	..	..
ROCK SOLE	44	110
SAND SOLE	3	..
SPECKLED SANDDAB	..	3
STARRY FLOUNDER	..	..
OTHER FLATFISH	..	..
S. FLAVIDUS	..	..
S. MALIGER	..	..
S. PAUCISPINIS	..	..
S. PINNIGER	..	..
S. RUBERRIMUS	..	..
S. WILSONI	..	..
S. ZACENTRUS	..	..
OTHER ROCKFISH	..	..
KELP GREENLING	..	..
LINGCOD	..	50
PACIFIC COD	..	16
PACIFIC SAND LANCE	1	10
PACIFIC TOMCOD	..	..
SABLEFISH	..	..
SHINER PERCH	10	5
WALLEYE POLLOCK	..	..
OTHER ROUNDFISH	..	..
BIG SKATE	50	..
RATFISH	10	15
SPINY DOGFISH	..	..
OTHER SELACHII	..	..
INVERTEBRATES	..	20
TOTAL CATCH (KG)	155	250

APPENDIX TABLE 1. (CONTINUED)

HAUL NUMBER		69	70
DATE		APR 15	APR 15
AREA (MAJOR, MINOR)		5C,02	5C,02
START TIME	(PST)	12:46	14:58
DURATION	(MIN)	23	20
START N. LAT.	(DEG)	52	52
	(MIN)	59.6	57.2
W. LONG.	(DEG)	131	130
	(MIN)	..	44.2
START LORAN-C	X	12260.5	12341.0
	Y	30405.3	30408.0
FINISH N. LAT.	(DEG)	52	52
	(MIN)	59.8	57.8
W. LONG.	(DEG)	130	130
	(MIN)	58.2	42.2
FINISH LORAN-C	X	12266.2	12345.2
	Y	30407.0	30411.0
HAUL DISTANCE	(KM)	2.0	2.6
	(N MI)	1.1	1.4
DIRECTION (DEG.TRUE)		90	110
BOTTOM DEPTH	(M)	29- 29	55- 59
	(FM)	16- 16	30- 32
MODAL DEPTH	(M)	29	57
WATER TEMP.	(DEG C)	0.0- 0.0	0.0- 0.0
TEMP. DEPTH	(M)	0- ..	0- ..
GEAR TYPE		106	106
TOTAL CATCH	(KG)	155	250
REMARKS		USABLE	USABLE

Appendix Table 2. Common and scientific names of species caught on M/V NUCLEUS Hecate Survey April 1-18, 1982.

Common Name	Scientific Name
Flatfish	
Butter sole	Isopsetta isolepis
C-O sole	Pleuronichthys coenosus
Curfin sole	Pleuronichthys decurrens
Dover sole	Microstomus pacificus
English sole	Parophrys vetulus
Flathead sole	Hippoglossoides elassodon
Pacific halibut	Hippoglossus stemolepis
Pacific sandab	Citharichthys sordidus
Petrale sole	Eopsetta jordani
Rex sole	Glyptocephalus zachirus
Rock sole	Lepidopsetta bilineata
Sand sole	Psettichthys melanostictus
Slender sole	Lyopsetta exilis
Speckled sanddab	Citharichthys stigmaeus
Starry flounder	Platichthys stellatus
Yellowfin sole	Limanda aspera
Rockfish	
Bocaccio	Sebastes paucispinis
Canary rockfish	Sebastes pinniger
Copper rockfish	Sebastes caurinus
Harlequin rockfish	Sebastes variegatus
Pacific ocean perch	Sebastes alutus
Pygmy rockfish	Sebastes wilsoni
Quillback rockfish	Sebastes maliger
Redbanded rockfish	Sebastes babcocki
Redstripe rockfish	Sebastes proriger
Rougheye rockfish	Sebastes aleutianus
Sharpchin rockfish	Sebastes zacentrus
Yelloweye rockfish	Sebastes ruberrimus
Yellowtail rockfish	Sebastes flavidus
Roundfish	
Calico surfperch	Amphistichus koelzi
Eulachon	Thaleichthys pacificus
Kelp greenling	Hexagrammos decagrammus
Lingcod	Ophiodon elongatus
Northern anchovy	Engraulis mordax mordax
Pacific cod	Gadus macrocephalus
Pacific herring	Clupea harengus pallasi
Pacific sandlance	Ammodytes hexapterus
Pacific tomcod	Microgadus proximus
Poachers	Agonidae
Sablefish	Anoplopoma fimbria

Appendix Table 2. (cont'd)

Common Name	Scientific Name
Roundfish	
Sculpins	Cottidae
Shiner perch	Cymatogaster aggregata
Walleye pollock	Theragra chalcogramma
Selachii	
Big skate	Raja binoculata
Ratfish	Hydrolagus colliei
Spiny dogfish	Squalus acanthias
Invertebrates	
Anemone	Actiniaria
Barnacles	Cirripedia
Brittle stars	Ophiuroidea
Echinoderms	Echinoidea
Opal squid	Loligo opalescens
Sand dollars	Echinoidea
Sea cucumbers	Parastichopus californicus
Sea pens	Ptilosarcus gurneyi
Sea urchins	Echinoidea
Squid	Tenthoidea
Starfish	Asteroidea

Appendix Table 3. Temperature profiles collected during Hecate Strait survey, April 1-18, 1982.

Tow or Stn No.	Day/Mo.	Time (+8)	Lat	Long	Bott. depth (m)	0	5	10	25	50	75	100	125	Bott. Temp.
Stn #1	2/4	1700	51°07'	128°21'	131	7.9	7.9	7.9	7.8	7.9	7.9	7.9	7.8	7.7
Tow #1	3/4	1120	52°41'	130°54'	97	7.0	7.0	7.0	6.9	7.0	7.5	-	-	7.6
6	3/4	1715	52°48'	130°47'	78	7.4	7.1	7.0	7.0	7.1	7.4	-	-	7.5
13	3/4	1330	53°05'	130°55'	75	7.4	7.0	7.0	7.0	7.1	7.2	-	-	-
20	5/4	0800	52°58'	131°36'	63	7.2	7.3	7.3	7.2	7.3	-	-	-	7.3
25	6/4	1015	53°37'	130°48'	75	7.0	7.0	7.0	7.1	7.0	7.0	-	-	-
30	7/4	0800	53°38'	131°01'	47	6.9	6.9	7.0	7.0	-	-	-	-	7.0
35	7/4	1600	53°32'	131°17'	37	8.1	7.1	7.0	7.0	-	-	-	-	7.0
38	8/4	1210	53°41'	131°15'	50	7.0	6.9	6.9	6.8	6.9	-	-	-	-
39	8/4	1515	53°47'	130°57'	77	7.4	7.3	7.2	7.1	7.0	7.1	-	-	7.1
45	9/4	1030	53°48'	131°28'	25	7.0	7.0	7.0	7.0	-	-	-	-	-
51	10/4	1120	54°03'	130°59'	75	7.1	7.1	7.0	7.0	6.9	7.0	-	-	-
63	14/4	1730	52°52'	131°13'	45	7.5	7.4	7.3	7.2	-	-	-	-	7.3
67	15/4	1130	53°04'	131°05'	-	7.3	(surface temp. only)							
68	15/4	1230	53°02'	131°01'	38	7.2	7.2	7.2	7.2	-	-	-	-	7.2

Appendix Table 4. Head/total length data for English sole males. M/V NUCLEUS, April 1-18, 1982.

Head Length (mm)	Total Length (cm)																													
	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
40	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	-	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	-	3	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	-	1	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	-	1	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	-	-	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	-	-	-	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53	-	-	-	1	2	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	4	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	0	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	1	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	2	4	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	1	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
62	-	-	-	-	-	-	-	0	3	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65	-	-	-	-	-	-	-	-	0	1	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	0	1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	1	4	0	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	1	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	0	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	1	3	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	0	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	1	0	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-	2	2	2	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-	-	1	5	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix Table 4. (cont'd)

Head Length (mm)	Total Length (cm)																												
	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
76	-	-	-	-	-	-	-	-	-	-	-	-	-	2	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-
78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	-	0	-	-	-	-	-	-	-	-	-	-	-	-
79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	2	-	0	-	-	-	-	-	-	-	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-
81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	0	-	-	-	-	-	-	-	-	-	-	-	-
82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	0	-	-	-	-	-	-	-	-	-	-	-	-
83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	1	-	-	-	-	-	-	-	-	-	-	-	-
84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-
85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	0	1	1	-	-	-	-	-	-	-	-	-	-
86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	5	1	0	-	-	-	-	-	-	-	-	-	-
87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	2	3	-	-	-	-	-	-	-	-	-	-
88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-
89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4	3	-	-	-	-	-	-	-	-	-	-
90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-
91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	4	-	-	-	-	-	-	-	-	-
92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	-	-	-	-	-	-	-	-	-
93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-
94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	-	-	-	-	-	-	-	-
95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	4	-	-	1	-	-	-	-	-
96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	-	1	0	1	-	-	-	-
97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	4	0	0	-	-	-	-	-
98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-
99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	0	-	-	-	-	-	-
100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
106	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
109	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix Table 5. Head/total length data for English sole females. M/V NUCLEUS, April 1-18, 1982.

Head Length (mm)	Total Length (cm)																																				
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
44	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	-	-	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	3	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	-	-	0	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	-	-	3	0	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	1	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	4	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	1	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	3	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
62	-	-	-	-	-	-	1	0	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	1	1	3	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	2	2	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
65	-	-	-	-	-	-	0	2	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	1	3	2	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	1	1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	2	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	0	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	5	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	0	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	1	-	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	0	-	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	0	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	0	-	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix Table 5 (cont'd)

Head Length (mm)	Total Length (cm)																																						
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
76	-	-	-	-	-	-	-	-	-	1	-	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	-	-	1	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
78	-	-	-	-	-	-	-	-	-	-	-	0	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
79	-	-	-	-	-	-	-	-	-	-	-	2	2	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-	-	1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
81	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
82	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
83	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	2	0	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	1	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4	2	3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	2	1	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	0	2	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	0	0	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	0	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	3	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-
100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	2	0	1	-	-	-	-	-	-	-	-	-	-	-	-
101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	1	0	0	-	-	-	-	-	-	-	-	-	-	-	-
102	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-
103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	2	2	0	-	-	-	-	-	-	-	-	-	-	-	-
104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	0	2	-	-	-	-	-	-	-	-	-	-	-	-
105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	2	1	1	-	-	-	-	-	-	-	-	-	-	-
106	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	1	1	0	-	-	-	-	-	-	-	-	-	-	-
107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	2	0	1	-	-	-	-	-	-	-	-	-	-	-
108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	0	1	-	-	-	-	-	-	-	-	-	-	-
109	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	1	1	1	-	-	-	-	-	-	-	-	-	-
110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	2	3	0	3	-	-	-	-	-	-	-	-	-	-

Appendix Table 5 (cont'd)

| Head Length (mm) | Total Length (cm) | | |

Appendix Table 6. Head/total length data for rock sole males. M/V NUCLEUS, April 1-18, 1982.

Head Length (mm)	Total Length (cm)																												
	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
31	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	-	-	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	0	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	-	-	-	0	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	-	-	-	1	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	-	-	-	-	-	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	-	-	-	-	-	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	-	-	-	-	-	1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	2	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
52	-	-	-	-	-	-	-	-	1	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	2	0	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	1	3	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-	2	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-	2	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-	-	-	-	-	-	3	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
62	-	-	-	-	-	-	-	-	-	-	-	-	3	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	2	1	-	-	-	-	-	-	-	-	-	-	-	-

Appendix Table 6 (cont'd)

Head Length (mm)	Total Length (cm)																													
	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
65	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	0	2	-	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	1	-	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	0	-	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	2	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	1	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1	1	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1	3	1	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	5	1	2	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	2	1	2	0	2	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	2	0	2	3	0	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1	0	0	4	1	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	0	0	1	1	1	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	2	4	2	0	-	-	-	-	-	-
78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	0	1	1	0	0	-	-	-	-	-	-
79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	2	0	0	3	1	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	0	2	1	1	0	0	-	-	-	-	-
81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	0	2	1	1	0	0	-	-	-	-	-
82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	0	1	0	-	-	-	-	-
83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	2	-	-	-	-
84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	2	-	-	-	-
85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	1	-	-	-	-
86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	0	-	-	-	-
87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-
88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-
89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	-	-	1
90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	1	-	-
91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	-	-	-
92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	-	-	-
93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	-	-	-
94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-

Appendix Table 7. Head/total length data for rock sole females. H/V NUCLEUS, April 1-18, 1982.

| Head Length (mm) | Total Length (cm) | | |

Appendix Table 7 (cont'd)

| Head Length (mm) | Total Length (cm) | | |

Appendix Table 7. (cont'd)

| Head Length (mm) | Total Length (cm) | | |

Appendix Table 8. Butter sole length frequencies (numbers) by haul.
M/V Nucleus Hecate Survey, April 1-18,1982.

TOW NO.	38				39				56				58			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
12	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
16	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	1	1	0	1	0	1	0	0	0	0	0	1	0	1
18	0	0	2	2	2	0	0	2	0	0	0	0	0	0	0	0
19	0	0	1	1	3	1	0	4	2	2	0	4	0	1	0	1
20	0	0	0	0	2	1	0	3	2	4	0	6	1	1	0	2
21	0	0	2	2	1	0	0	1	0	5	0	5	1	0	0	1
22	0	0	1	1	1	0	0	1	4	4	0	8	0	0	0	0
23	0	0	1	1	1	1	0	2	9	6	0	15	4	2	0	6
24	0	0	0	0	4	0	0	4	4	10	0	14	0	0	0	0
25	0	0	2	2	1	0	0	1	15	17	0	32	0	4	0	4
26	0	0	4	4	1	2	0	3	19	15	0	34	1	1	0	2
27	0	0	1	1	2	0	0	2	11	14	0	25	0	0	0	0
28	0	0	3	3	0	0	0	0	11	14	0	25	0	2	0	2
29	0	0	0	0	0	1	0	1	13	11	0	24	0	2	0	2
30	0	0	2	2	0	1	0	1	14	11	0	25	0	0	0	0
31	0	0	1	1	0	0	0	0	7	9	0	16	0	0	0	0
32	0	0	1	1	0	0	0	0	4	6	0	10	0	0	0	0
33	0	0	1	1	0	0	0	0	4	4	0	8	0	0	0	0
34	0	0	0	0	0	1	0	1	0	4	0	4	0	0	0	0
TOTAL	0	0	29	29	18	9	0	27	119	136	0	255	7	15	0	22

Appendix Table 9. Dogfish length frequency (numbers sampled).
M/V Nucleus Hecate Survey, April 1-18,1982.

TOW NO. 25

TOTAL LENGTH (CM)	M	F	U	T
52	1	0	0	1
53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
58	0	0	0	0
59	0	0	0	0
60	0	1	0	1
61	3	0	0	3
62	1	1	0	2
63	2	2	0	4
64	2	0	0	2
65	0	2	0	2
66	0	4	0	4
67	2	2	0	4
68	3	2	0	5
69	1	3	0	4
70	1	4	0	5
71	2	2	0	4
72	2	2	0	4
73	3	8	0	11
74	2	4	0	6
75	2	5	0	7
76	9	2	0	11
77	5	4	0	9
78	6	7	0	13
79	4	9	0	13

80	4	4	0	8
81	4	3	0	7
82	5	3	0	8
83	6	4	0	10
84	2	4	0	6
85	2	5	0	7
86	2	1	0	3
87	2	3	0	5
88	0	4	0	4
89	0	5	0	5
90	1	1	0	2
91	1	1	0	2
92	0	2	0	2
93	0	1	0	1
94	0	1	0	1
95	0	1	0	1
96	0	0	0	0
97	0	2	0	2
98	0	2	0	2
99	0	1	0	1
100	0	2	0	2
101	0	2	0	2
102	0	0	0	0
103	0	1	0	1
104	0	0	0	0
105	0	0	0	0
106	0	2	0	2
107	0	1	0	1
108	0	0	0	0
109	0	0	0	0
110	0	1	0	1
TOTAL	80	121	0	201

Appendix Table 10. Dover sole length frequencies (numbers sampled). M/V Nucleus Hecate Survey, April 1-18,1982.

TOW NO. 55

FORK LENGTH (CM)	M	F	U	T
26	4	0	0	4
27	11	0	0	11
28	15	10	0	25
29	14	11	0	25
30	17	10	0	27
31	15	9	0	24
32	2	8	0	10
33	5	4	0	9
34	2	6	0	8
35	1	1	0	2
36	0	2	0	2
37	0	2	0	2
TOTAL	86	63	0	149

Appendix Table 11. English sole length frequencies (numbers) by haul.
M/V Nucleus Hecate Survey, April 1-18,1982.

TOW NO.	9				10				13				15				20			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	12	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	1	1	0	0	23	23	0	0	0	0
13	0	0	3	3	0	0	2	2	0	0	3	3	0	0	33	33	0	0	0	0
14	0	0	2	2	0	0	5	5	0	0	19	19	0	0	33	33	0	0	0	0
15	0	0	4	4	0	0	8	8	0	0	17	17	0	0	36	36	0	0	3	3
16	0	0	1	1	0	0	10	10	0	0	19	19	0	0	15	15	0	0	0	0
17	0	0	1	1	0	0	6	6	0	0	6	6	0	0	3	3	0	0	6	6
18	0	0	2	2	3	0	0	3	0	0	4	4	0	0	1	1	0	0	9	9
19	0	0	0	0	6	1	1	8	0	0	7	7	0	0	4	4	0	0	11	11
20	2	1	0	3	17	9	0	26	8	3	0	11	1	1	3	5	10	10	0	20
21	5	6	0	11	29	6	0	35	5	5	0	10	3	3	0	6	10	6	0	16
22	8	1	0	9	36	5	0	41	12	7	0	19	2	3	0	5	28	8	0	36
23	4	2	0	6	27	10	0	37	12	5	0	17	8	3	0	11	20	20	0	40
24	5	3	0	8	30	9	0	39	20	6	0	26	7	5	0	12	23	9	0	32
25	12	3	0	15	28	8	0	36	15	6	0	21	6	4	0	10	12	4	0	16
26	6	4	0	10	24	9	0	33	17	14	0	31	10	3	0	13	11	12	0	23
27	11	2	0	13	15	5	0	20	9	6	0	15	13	4	0	17	8	6	0	14
28	6	2	0	8	10	8	0	18	12	9	0	21	5	7	0	12	5	6	0	11
29	6	1	0	7	9	1	0	10	17	7	0	24	16	8	0	24	2	4	0	6
30	3	0	0	3	6	3	0	9	11	8	0	19	3	6	0	9	4	2	0	6
31	5	1	0	6	6	3	0	9	7	2	0	9	8	5	0	13	1	4	0	5
32	11	2	0	13	3	1	0	4	3	2	0	5	6	7	0	13	5	2	0	7
33	1	1	0	2	0	2	0	2	2	6	0	8	3	7	0	10	1	0	0	1
34	5	2	0	7	1	4	0	5	4	7	0	11	9	10	0	19	1	1	0	2
35	8	1	0	9	1	3	0	4	1	3	0	4	8	10	0	18	3	0	0	3
									1	1	0	2	12	8	0	20	1	1	0	2

36	6	2	0	8	0	2	0	2	3	5	0	8	15	9	0	24	2	3	0	5
37	3	0	0	3	1	5	0	6	0	2	0	2	11	9	0	20	1	1	0	2
38	3	2	0	5	0	0	0	0	0	2	0	2	5	6	0	11	1	4	0	5
39	0	1	0	1	0	1	0	1	0	3	0	3	5	4	0	9	0	0	0	0
40	1	0	0	1	0	1	0	1	0	0	0	0	2	10	0	12	0	0	0	0
41	0	0	0	0	0	0	0	0	0	1	0	1	0	7	0	7	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10	0	2	0	2
43	0	0	0	0	0	0	0	0	0	1	0	1	0	7	0	7	0	0	0	0
44	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0
45	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	0	0	0	0
46	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0
47	0	0	0	0	0	0	0	0	0	1	0	1	0	4	0	4	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	111	37	13	161	252	97	32	381	159	114	76	349	158	167	169	494	149	105	29	283

Appendix Table 11. English sole length frequencies (numbers) by haul.
M/V Nucleus Hecate Survey, April 1-18,1982.

TOW NO.	25				26				27				36				38			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
10	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	7	7
11	0	0	0	0	0	0	0	0	0	0	2	2	0	0	1	1	0	0	21	21
12	0	0	0	0	0	0	1	1	0	0	7	7	0	0	0	0	0	0	36	36
13	0	0	1	1	0	0	8	8	0	0	2	2	0	0	3	3	0	0	59	59
14	0	0	0	0	0	0	21	21	0	0	1	1	0	0	4	4	0	0	81	81
15	0	0	1	1	0	0	8	8	0	0	3	3	0	0	2	2	0	0	69	69
16	0	0	0	0	0	0	12	12	0	0	0	0	0	0	1	1	0	0	33	33
17	0	0	0	0	0	0	8	8	0	0	0	0	0	0	0	0	0	0	13	13
18	0	0	0	0	0	0	8	8	0	0	0	0	0	0	0	0	0	0	4	4
19	0	0	1	1	0	0	8	8	0	0	1	1	0	0	0	0	0	0	2	2
20	0	0	0	0	3	4	0	7	0	0	0	0	0	0	0	0	0	0	1	1
21	0	0	0	0	11	10	0	21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	15	15	0	30	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	8	15	0	23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	8	7	0	15	3	3	0	6	0	0	0	0	0	0	0	0
25	0	0	1	1	4	7	0	11	2	1	0	3	0	0	0	0	0	0	0	0
26	0	0	0	0	5	12	0	17	1	2	0	3	0	0	0	0	0	0	0	0
27	0	0	0	0	1	8	0	9	2	4	0	6	0	0	0	0	0	0	0	0
28	0	0	0	0	3	3	0	6	0	3	0	3	0	0	0	0	0	0	0	0
29	0	0	0	0	3	11	0	14	2	3	0	5	0	0	0	0	0	0	0	0
30	0	0	0	0	1	4	0	5	1	2	0	3	0	0	1	1	0	0	0	0
31	0	0	0	0	0	4	0	4	0	3	0	3	0	0	0	0	1	0	0	1
32	0	0	0	0	1	6	0	7	1	0	0	1	0	0	0	0	0	0	0	0
33	0	0	0	0	2	1	0	3	1	3	0	4	0	0	0	0	0	0	0	0
34	0	0	0	0	0	3	0	3	1	2	0	3	0	0	0	0	1	0	0	1
35	0	0	2	2	1	4	0	5	1	6	0	7	0	0	0	0	1	0	0	1

36	0	0	2	2	0	2	C	2	2	0	0	2	0	0	0	0	3	0	0	3
37	0	0	1	1	0	1	0	1	0	4	0	4	0	0	0	0	0	1	0	1
38	0	0	1	1	0	0	0	0	0	3	0	5	0	0	0	0	1	1	0	2
39	0	0	2	2	0	2	0	2	0	2	0	2	0	0	0	0	1	0	0	1
40	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	1
41	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	3	1	0	4
42	0	0	2	2	0	2	0	2	0	0	0	1	0	0	0	0	2	0	0	2
43	0	0	0	0	0	1	C	1	0	0	0	0	0	0	0	0	1	3	0	4
44	0	0	1	1	0	2	0	2	0	0	0	0	0	0	0	0	0	1	0	1
45	0	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	1
46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
48	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
54	0	0	C	C	0	0	0	0	0	C	0	0	0	0	0	0	0	1	0	1
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
TOTAL	0	0	17	17	66	127	74	267	20	42	18	80	0	0	14	14	17	21	327	365

Appendix Table 11. English sole length frequencies (numbers) by haul.
M/V Nucleus Hecate Survey, April 1-18,1982.

TOW NO.	39				41				43				48				51			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	9	9	0	0	0	0	0	0	0	0
11	0	0	1	1	0	0	1	1	0	0	16	16	0	0	2	2	0	0	0	0
12	0	0	7	7	0	0	1	1	0	0	22	22	0	0	4	4	0	0	1	1
13	0	0	27	27	0	0	2	2	0	0	11	11	0	0	9	9	0	0	1	1
14	0	0	29	29	0	0	4	4	0	0	8	8	0	0	4	4	0	0	1	1
15	0	0	30	30	0	0	7	7	0	0	3	3	0	0	1	1	0	0	1	1
16	0	0	19	19	0	0	3	3	0	0	1	1	0	0	2	2	0	0	1	1
17	0	0	8	8	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
18	0	0	5	5	0	0	3	3	0	0	0	0	0	0	1	1	0	0	1	1
19	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
20	7	4	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
21	10	7	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	8	17	0	25	0	1	0	1	0	0	0	0	0	0	0	0	2	1	0	3
23	6	14	0	20	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
24	4	5	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	1	7	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
26	0	9	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
27	1	8	0	9	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
28	0	5	0	5	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
29	1	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
30	1	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	1	3	0	4	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
32	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	1	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0

36	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	0	3	0	3	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
38	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	0	6	0	6	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0
40	0	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	0	4	0	4	0	0	0	0	0	1	0	1	0	0	0	1	1	0	0	0	0	0
46	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
50	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	41	121	130	292	1	9	22	32	0	6	75	81	0	0	25	25	3	7	6	16		

Appendix Table 11. English sole length frequencies (numbers) by haul.
M/V Nucleus Hecate Survey, April 1-18,1982.

TOW NO.	55				56				58				62				64			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0
25	1	0	0	1	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	1	2	0	3	0	0	1	1	0	0	0	0	0	0	0	0
28	2	1	0	3	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0
29	0	1	0	1	5	3	0	8	0	0	0	0	0	0	0	0	1	0	0	1
30	2	1	0	3	5	7	0	12	0	0	1	1	0	0	0	0	0	0	0	0
31	6	2	0	8	6	6	0	12	0	0	0	0	0	0	0	0	0	0	0	0
32	5	4	0	9	8	7	0	15	0	0	1	1	0	0	0	0	2	0	0	2
33	4	5	0	9	6	8	0	14	0	0	1	1	0	0	0	0	2	0	0	2
34	4	1	0	5	3	9	0	12	0	0	0	0	0	0	0	0	4	0	0	4
35	5	2	0	7	5	7	0	12	0	0	0	0	0	0	1	1	10	1	0	11
																	7	1	0	8

36	5	6	0	11	3	7	0	10	0	0	0	0	0	0	1	1	13	1	0	14
37	3	4	0	7	1	7	0	8	0	0	2	2	0	0	0	0	13	1	0	14
38	3	5	0	8	0	4	0	4	0	0	1	1	0	0	0	0	6	1	0	7
39	1	2	0	3	2	3	0	5	0	0	1	1	0	0	0	0	5	1	0	6
40	4	3	0	7	0	3	0	3	0	0	2	2	0	0	0	0	2	0	0	2
41	4	2	0	6	0	1	0	1	0	0	1	1	0	0	0	0	1	1	0	2
42	1	0	0	1	0	1	0	1	0	0	1	1	0	0	0	0	0	1	0	1
43	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
44	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	52	43	0	95	50	82	0	132	0	0	12	12	0	0	2	2	66	9	21	96

Appendix Table 11. English sole length frequencies (numbers) by haul.
M/V Nucleus Hecate Survey, April 1-18,1982.

TOW NO.	67				68				69			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	1	1	0	0	5	5	0	0	0	0
13	0	0	2	2	0	0	7	7	0	0	2	2
14	0	0	2	2	0	0	23	23	0	0	5	5
15	0	0	4	4	0	0	15	15	0	0	1	1
16	0	0	2	2	0	0	5	5	0	0	3	3
17	0	0	0	0	0	0	4	4	0	0	1	1
18	0	0	1	1	0	0	1	1	0	0	0	0
19	1	0	0	1	0	0	0	0	0	0	0	0
20	0	2	0	2	0	0	1	1	0	0	0	0
21	4	0	0	4	2	0	0	2	1	0	0	1
22	0	0	0	0	1	0	0	1	0	0	0	0
23	2	1	0	3	0	0	0	0	0	0	0	0
24	4	1	0	5	0	0	0	0	0	0	0	0
25	4	1	0	5	1	0	0	1	0	0	0	0
26	5	4	0	9	0	0	0	0	0	0	0	0
27	3	7	0	10	0	0	0	0	0	0	0	0
28	7	4	0	11	0	0	0	0	0	0	0	0
29	14	5	0	19	0	0	0	0	0	0	0	0
30	4	5	0	9	2	0	0	2	0	0	0	0
31	5	3	0	8	0	0	0	0	0	0	0	0
32	3	5	0	8	0	0	0	0	2	0	0	2
33	5	1	0	6	0	0	0	0	2	1	0	3
34	6	2	0	8	2	0	0	2	2	0	0	2
35	5	6	0	11	1	0	0	1	0	0	0	

36	7	5	0	12	0	0	0	0	3	0	0	3
37	4	3	0	7	0	0	0	0	1	0	0	1
38	4	3	0	7	0	1	0	1	3	0	0	3
39	1	4	0	5	0	0	0	0	0	0	0	0
40	2	1	0	3	0	0	0	0	0	0	0	0
41	0	6	0	6	1	0	0	1	0	1	0	1
42	0	2	0	2	0	0	0	0	0	0	0	0
43	0	0	0	0	0	1	0	1	0	0	0	0
44	0	0	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	1	0	1	0	0	0	0
46	0	1	0	1	0	0	0	0	0	0	0	0
47	0	1	0	1	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	90	73	12	175	10	3	61	74	14	2	12	28

Appendix Table 12. Herring length frequencies (numbers) by haul. M/V Nucleus Hecate Survey. April 1-18,1982.

TOW NO.	27				48			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T
11	0	0	0	0	0	0	1	1
12	0	0	3	3	0	0	0	0
13	0	0	2	2	0	0	0	0
14	0	0	3	3	0	0	0	0
15	0	0	11	11	0	0	0	0
16	0	0	39	39	0	0	1	1
17	0	0	54	54	0	0	2	2
18	0	0	16	16	0	0	0	0
19	0	0	3	3	0	0	1	1
20	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	4	4
22	0	0	1	1	0	0	6	6
23	0	0	0	0	0	0	1	1
TOTAL	0	0	132	132	0	0	16	16

Appendix Table 13. Pacific cod length frequencies (numbers) by haul.
M/V Nucleus Hecate Survey. April 1-18,1982.

TOW NO.	7				8				21				34				35			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	3	3	0	0	1	1	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	3	3	0	0	1	1	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	1	1	0	0	5	5	0	0	0	0	0	0	0	0
31	0	0	2	2	0	0	0	0	0	0	10	10	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	1	1	0	0	4	4	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	1	1	0	0	14	14	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	8	8	0	0	0	0	0	0	0	0
35	0	0	1	1	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
37	0	0	1	1	0	0	1	1	0	0	2	2	0	0	0	0	0	0	0	0
38	0	0	2	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
39	0	0	1	1	0	0	1	1	0	0	3	3	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	0	0	1	1	0	0	1	1	0	0	7	7	0	0	0	0	0	0	0	0
42	0	0	1	1	0	0	2	2	0	0	2	2	0	0	0	0	0	0	0	0
43	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
44	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
45	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
46	0	0	2	2	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0
47	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0
48	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	0	0	2	2	0	0	1	1	0	0	3	3	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0

50	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0
51	0	0	2	2	0	0	0	0	0	0	2	2	0	0	3	3	0	0	0	0
52	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	4	4	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	2	2	0	0	1	1	0	0	2	2	0	0	0	0
55	0	0	1	1	0	0	2	2	0	0	1	1	0	0	1	1	0	0	0	0
56	0	0	1	1	0	0	2	2	0	0	0	0	0	0	3	3	0	0	0	0
57	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
59	0	0	0	0	0	0	1	1	0	0	0	0	0	0	5	5	0	0	1	1
60	0	0	0	0	0	0	1	1	0	0	0	0	0	0	3	3	0	0	0	0
61	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2	2	0	0	1	1
62	0	0	0	0	0	0	1	1	0	0	0	0	0	0	5	5	0	0	0	0
63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0
64	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0
65	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1
72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	36	36	0	0	30	30	0	0	77	77	0	0	32	32	0	0	7	7

Appendix Table 13. Pacific cod length frequencies (numbers) by haul.
M/V Nucleus Hecate Survey. April 1-18,1982.

TOW NO.	36				39				43				50				54			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	2	2	0	2	0	2	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	2	0	0	0	0
28	1	0	0	1	0	0	0	0	0	0	0	0	2	5	0	7	0	0	0	0
29	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	1	1	2	4	0	6	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	5	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0
42	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
46	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
47	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
49	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	1

50	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	3	0	0	3	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
52	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	0	0	1	0	1
55	0	1	0	1	0	0	0	0	0	0	0	0	1	2	0	3	1	3	0	4	0	4
56	0	0	0	0	0	0	0	0	2	0	0	2	1	3	0	4	0	0	0	0	0	0
57	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	2	3	0	5	0	5
58	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0	2	2	3	0	5	0	5
59	0	1	0	1	0	0	0	0	0	0	0	0	3	2	0	5	2	2	0	4	0	4
60	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	3	5	0	8	0	8
61	0	0	0	0	0	0	0	0	1	0	0	1	1	2	0	3	4	4	0	8	0	8
62	1	0	0	1	0	2	0	2	0	0	0	0	0	1	0	1	2	2	0	4	0	4
63	0	0	0	0	1	1	0	2	0	0	0	0	3	1	0	4	2	2	0	4	0	4
64	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	2	0	2
65	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5	3	0	8	0	8
66	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	6	2	0	8	0	8
67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3	0	3
68	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	0	2	0	2	0	2
69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	2	0	2
71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	0	3
72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1
74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1
75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	2
76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1
78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1
79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1
TOTAL	9	6	0	15	1	3	0	4	4	0	8	12	33	44	0	77	39	42	0	81	0	81

Appendix Table 13. Pacific cod length frequencies (numbers) by haul.
M/V Nucleus Hecate Survey. April 1-18,1982.

TOW NO.	55				59				60				70			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
27	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	5
28	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3
31	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	5
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
38	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
45	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
46	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
47	1	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0
48	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
49	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0

50	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0
51	2	0	0	2	0	0	1	1	0	0	0	0	0	0	0	0
52	1	4	0	5	0	0	3	3	0	0	0	0	0	0	0	0
53	1	4	0	5	0	0	4	4	0	0	0	0	0	0	0	0
54	1	0	0	1	0	0	3	3	0	0	0	0	0	0	0	0
55	0	1	0	1	0	0	4	4	0	0	0	0	0	0	0	0
56	3	1	0	4	0	0	1	1	1	0	0	1	0	0	0	0
57	1	1	0	2	0	0	6	6	1	0	0	1	0	0	0	0
58	0	0	0	0	0	0	7	7	0	0	0	0	0	0	0	0
59	1	0	0	1	0	0	10	10	0	0	0	0	0	0	0	0
60	1	0	0	1	0	0	8	8	1	0	0	1	0	0	0	0
61	0	0	0	0	0	0	11	11	0	1	0	1	0	0	0	0
62	0	0	0	0	0	0	10	10	0	0	0	0	0	0	0	0
63	0	2	0	2	0	0	13	13	1	0	0	1	0	0	0	0
64	0	0	0	0	0	0	14	14	1	0	0	1	0	0	0	0
65	1	0	0	1	0	0	6	6	0	1	0	1	0	0	0	0
66	0	0	0	0	0	0	7	7	0	1	0	1	0	0	0	0
67	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	0
68	0	0	0	0	0	0	7	7	0	1	0	1	0	0	0	0
69	0	0	0	0	0	0	4	4	1	1	0	2	0	0	0	0
70	0	0	0	0	0	0	3	3	0	1	0	1	0	0	0	0
71	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
73	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0
74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
76	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	14	22	0	36	0	0	132	132	7	6	0	13	15	22	0	37

Appendix Table 14. Pollock length frequencies (numbers) by haul.
M/V Nucleus Hecate Survey. April 1-18,1982.

TOW NO.	20				26				51			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T
12	0	0	0	0	0	0	0	0	0	0	2	2
13	0	0	0	0	0	0	5	5	0	0	16	16
14	0	0	0	0	0	0	19	19	0	0	18	18
15	1	0	1	2	0	0	24	24	0	0	8	8
16	2	4	0	6	0	0	12	12	0	0	0	0
17	0	7	0	7	0	0	8	8	0	0	0	0
18	2	2	0	4	0	0	3	3	0	0	0	0
19	0	1	0	1	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	1	1	0	0	0	0
22	1	0	0	1	0	0	0	0	0	0	0	0
23	1	1	0	2	0	0	0	0	0	0	0	0
24	4	0	0	4	0	0	0	0	0	0	0	0
25	9	19	0	28	0	0	0	0	0	0	0	0
26	23	22	0	45	0	0	0	0	0	0	0	0
27	16	20	0	36	0	0	0	0	0	0	0	0
28	8	16	0	24	0	0	0	0	0	0	0	0
29	8	18	0	26	0	0	0	0	0	0	0	0
30	12	23	0	35	0	0	0	0	0	0	0	0
31	5	18	0	23	0	0	0	0	0	0	0	0
32	2	16	0	18	0	0	0	0	0	0	0	0
33	1	11	0	12	0	0	0	0	0	0	0	0
34	0	9	0	9	0	0	0	0	0	0	0	0
35	0	6	0	6	0	0	0	0	0	0	0	0
36	0	3	0	3	0	0	0	0	0	0	0	0
TOTAL	95	196	1	292	0	0	72	72	0	0	44	44

Appendix Table 15. Rock sole length frequencies (numbers) by haul.
M/V Nucleus Hecate survey, April 1-18,1982.

TOW NO.	1				2				4				5				6			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
14	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
16	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
21	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
25	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
26	1	0	0	1	0	0	1	1	0	0	0	0	0	0	1	1	0	0	1	1
27	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
28	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	2	0	0	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
32	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	1	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1
35	4	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

36	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0
38	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	23	3	0	26	0	0	4	4	0	0	9	9	0	0	7	7	0	0	13	13

Appendix Table 15. Rock sole length frequencies (numbers) by haul.
M/V Nucleus Hecate survey, April 1-18,1982.

TOW NO.	7				8				9				11				12			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	2	2	0	0	2	2	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	2	2	0	0	4	4	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
16	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0
18	2	0	0	2	1	4	0	5	0	0	0	0	0	0	0	0	0	0	0	0
19	1	2	0	3	3	3	0	6	0	1	0	1	0	0	0	0	0	0	0	0
20	1	3	0	4	1	7	0	8	0	0	0	0	0	0	0	0	0	0	0	0
21	1	1	0	2	4	3	0	7	0	1	0	1	0	0	0	0	0	0	0	0
22	2	1	0	3	5	6	0	11	1	2	0	3	0	0	0	0	0	0	0	0
23	2	2	0	4	1	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0
24	2	0	0	2	3	3	0	6	0	0	0	0	0	0	0	0	0	0	0	0
25	4	5	0	9	0	3	0	3	0	1	0	1	0	0	0	0	0	0	0	0
26	2	2	0	4	2	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0
27	1	2	0	3	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
28	2	1	0	3	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0
29	2	1	0	3	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0
30	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	3	0	3	1	2	0	3	0	0	0	0	0	1	0	1	0	0	0	0
32	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	1	0	0	1
33	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2
35	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

36	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0		
37	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0		
38	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2		
40	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0		
41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1		
42	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0		
43	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0		
44	0	2	0	2	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0		
45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2		
46	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	0	1	0	1		
47	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0		
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1		
49	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
50	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0		
51	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0		
52	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
TOTAL	22	35	0	57	22	50	9	81	2	7	13	22	0	7	0	7	2	8	0	10		

Appendix Table 15. Rock sole length frequencies (numbers) by haul.
M/V Nucleus Hecate survey, April 1-18,1982.

TOW NO.	13				14				15				17				18			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	15	15	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	37	37	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	36	36	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	14	14	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	7	7	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	2	2	0	0	5	5	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	2	2	0	0	8	8	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	12	12	0	0	2	2	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	2	2	0	0	3	3	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	1	1	0	0	2	2	0	0	0	0	0	0	1	1
19	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	3	3	0	0	2	2	1	1	0	2	0	0	0	0	0	0	0	0
23	0	0	2	2	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	2	2	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	1	1	0	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
32	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	1	0	0	1
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3	2	0	0	2
35	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	1	2	0	0	2

36	0	0	0	0	0	0	0	0	0	1	0	1	2	1	0	3	1	0	0	1
37	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	1	1	0	0	1
38	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	4	1	0	0	1
39	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1
40	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2	0	1	0	1
41	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	4	0	4
42	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	1	0	1
43	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	3	0	3
44	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
45	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	9	9	0	0	40	40	1	6	133	140	9	14	0	23	9	12	1	22

Appendix Table 15. Rock sole length frequencies (numbers) by haul.
M/V Nucleus Hecate survey, April 1-18,1982.

TOW NO.	19				20				21				22				24			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
12	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
14	0	0	0	0	0	0	0	0	4	1	0	5	0	0	0	0	0	0	2	2
15	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1
16	0	0	0	0	0	0	0	0	2	3	0	5	0	0	0	0	2	1	1	4
17	0	0	0	0	0	0	0	0	3	3	0	6	0	0	0	0	1	1	0	2
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3
20	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	2	2	0	4	0	1	0	1	0	0	0	0
27	0	1	0	1	1	1	0	2	4	0	0	4	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	1	0	1	0	1
29	0	0	0	0	0	0	0	0	1	2	0	3	1	0	0	1	0	0	0	0
30	0	0	0	0	0	0	0	0	3	2	0	5	1	0	0	1	1	2	0	3
31	0	0	0	0	1	0	0	1	2	2	0	4	2	0	0	2	4	1	0	5
32	0	0	0	0	0	0	0	0	6	3	0	9	2	0	0	2	5	3	0	8
33	0	0	0	0	0	0	0	0	2	0	0	2	2	0	0	2	4	4	0	8
34	0	1	0	1	0	1	0	1	0	1	0	1	2	0	0	2	3	6	0	9
35	0	1	0	1	0	0	0	0	0	2	0	2	3	1	0	4	0	16	0	16
	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	6	0	6

36	0	0	0	0	0	0	0	0	1	0	0	1	1	2	0	3	0	3	0	3
37	0	2	0	2	0	0	0	0	1	0	0	1	0	1	0	1	0	1	0	1
38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
39	0	1	0	1	0	1	0	1	0	0	0	0	0	4	0	4	0	0	0	0
40	0	1	0	1	0	1	0	1	0	0	0	0	0	2	0	2	0	0	0	0
41	0	2	0	2	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1
42	0	1	0	1	0	1	0	1	0	1	0	1	0	2	0	2	0	0	0	0
43	0	1	0	1	0	1	0	1	0	2	0	2	0	1	0	1	0	0	0	0
44	0	1	0	1	0	1	0	1	0	1	0	1	0	4	0	4	0	0	0	0
45	0	5	0	5	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
46	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	19	5	24	2	7	0	9	37	26	0	63	15	22	0	37	22	52	8	82

Appendix Table 15. Rock sole length frequencies (numbers) by haul.
M/V Nucleus Hecate survey, April 1-18,1982.

TOW NO.	25				26				27				28				29			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	1	1
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	1	1
13	0	0	1	1	0	0	0	0	0	0	2	2	0	0	1	1	0	0	2	2
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2
15	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1
16	0	1	2	3	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1
17	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	4	4	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0
19	5	7	0	12	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
20	4	13	0	17	1	1	0	2	0	1	0	1	0	0	0	0	1	0	0	1
21	10	18	0	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	10	17	0	27	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	1
23	12	19	0	31	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
24	6	15	0	21	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
25	7	17	0	24	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
26	6	12	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	1	7	0	8	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
28	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
30	0	3	0	3	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
31	0	1	0	1	0	0	0	0	0	2	0	2	1	1	0	2	0	3	0	3
32	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1
33	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	1	0	1
34	0	1	0	1	0	1	0	1	1	0	0	1	0	2	0	2	0	1	0	1
35	0	0	0	0	0	0	0	0	0	2	0	2	0	3	0	3	0	6	0	6

36	0	1	0	1	0	0	0	0	0	0	0	0	0	3	0	3	0	1	0	1
37	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1
38	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	3	0	3
39	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2
40	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1
41	0	3	0	3	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1
42	0	2	0	2	0	0	0	0	0	0	0	0	0	3	0	3	0	2	0	2
43	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	2
44	0	1	0	1	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	3	0	3
46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
47	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	61	143	9	213	2	6	0	8	3	6	4	13	2	28	9	39	3	31	8	42

Appendix Table 15. Rock sole length frequencies (numbers) by haul.
M/V Nucleus Hecate survey, April 1-18,1982.

TOW NO.	30				31				32				33				34			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
21	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
27	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
28	3	2	0	5	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0
29	1	0	0	1	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	3	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0
31	1	2	0	3	5	1	0	6	0	0	0	0	0	0	0	0	0	0	0	0
32	8	1	0	9	3	5	0	8	0	0	0	0	0	0	0	0	1	2	0	3
33	2	1	0	3	7	5	0	12	0	0	0	0	0	0	0	0	0	1	0	1
34	2	2	0	4	3	1	0	4	0	0	0	0	0	0	0	0	0	5	0	5
35	0	4	0	4	4	5	0	9	0	0	0	0	0	0	1	1	0	3	0	3
																	0	2	0	2

36	2	1	0	3	1	4	0	5	0	0	0	0	0	0	0	0	0	4	0	4
37	0	5	0	5	0	4	0	4	0	0	1	1	0	0	1	1	0	4	0	4
38	2	3	0	5	0	2	0	2	0	0	0	0	0	0	0	0	0	4	0	4
39	1	2	0	3	0	2	0	2	0	0	1	1	0	0	0	0	0	7	0	7
40	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	0	1	0	1
41	0	2	0	2	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0
42	1	2	0	3	0	1	0	1	0	0	0	0	0	0	2	2	0	1	0	1
43	0	1	0	1	0	2	0	2	0	0	2	2	0	0	0	0	0	0	0	0
44	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	2
45	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0
46	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
49	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	28	33	7	68	31	42	0	73	0	0	4	4	0	0	6	6	1	40	0	41

Appendix Table 15. Rock sole length frequencies (numbers) by haul.
M/V Nucleus Hecate survey, April 1-18,1982.

TOW NO.	35				36				37				38				39			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0
5	0	0	0	0	0	0	2	2	0	0	1	1	0	0	0	0	0	0	2	2
6	0	0	0	0	0	0	2	2	0	0	1	1	0	0	0	0	0	0	2	2
7	0	0	0	0	0	0	2	2	0	0	0	0	0	0	1	1	0	0	1	1
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0
9	0	0	0	0	0	0	1	1	0	0	0	0	0	0	3	3	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0
11	0	0	0	0	0	0	1	1	0	0	0	0	0	0	5	5	0	0	0	0
12	0	0	0	0	0	0	3	3	0	0	0	0	0	0	4	4	0	0	1	1
13	0	0	0	0	0	0	2	2	0	0	0	0	0	0	7	7	0	0	2	2
14	0	0	0	0	0	0	2	2	0	0	1	1	0	0	7	7	0	0	1	1
15	0	0	0	0	0	0	1	1	0	0	0	0	0	0	3	3	0	0	1	1
16	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	3	3
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	4	0	6
19	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	3	0	4
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	3	0	8
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	8
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	8	0	18
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	6	0	13
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	7	0	15
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	6	0	8
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	4	0	9
27	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	4	0	5
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	4	0	4	0	0	0	0	2	0	0	2	1	1	0	2
32	0	0	0	0	0	3	0	3	1	0	0	1	0	1	0	1	0	0	0	0
33	1	0	0	1	0	4	0	4	0	1	0	1	0	1	0	1	0	0	0	0
34	0	0	0	0	0	3	0	3	0	2	0	2	1	2	0	3	0	0	0	0
35	0	0	0	0	0	8	0	8	0	0	0	0	0	3	0	3	0	0	0	0

36	0	1	0	1	0	2	0	2	0	3	0	3	0	2	0	2	0	0	0	0
37	0	1	0	1	0	3	0	3	0	1	0	1	0	3	0	3	0	0	0	0
38	0	0	0	0	0	4	0	4	0	0	0	0	0	2	0	2	0	0	0	0
39	0	1	0	1	0	2	0	2	0	1	0	1	0	2	0	2	0	0	0	1
40	1	1	0	2	0	2	0	2	0	2	0	2	0	1	0	1	0	1	0	1
41	0	0	0	0	0	1	0	1	0	2	0	2	0	1	0	1	0	0	0	0
42	0	0	0	0	0	4	0	4	0	1	0	1	0	0	0	0	0	0	0	1
43	0	1	0	1	0	4	0	4	0	1	0	1	0	1	0	1	0	1	0	1
44	0	0	0	0	0	3	0	3	0	0	0	0	0	2	0	2	0	0	0	0
45	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46	0	2	0	2	0	0	0	0	0	2	0	2	0	1	0	1	0	0	0	0
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	2	10	1	13	0	50	16	66	1	16	3	20	3	22	39	64	47	55	14	116

Appendix Table 15. Rock sole length frequencies (numbers) by haul.
M/V Nucleus Hecate survey, April 1-18,1982.

TOW NO.	40				41				42				43				44			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	14	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	34	0	0	1	1
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	54	54	0	0	2	2
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	17	0	0	1	1
10	0	0	1	1	0	0	3	3	0	0	0	0	0	0	5	5	0	0	0	0
11	0	0	2	2	0	0	11	11	0	0	2	2	0	0	9	9	0	0	0	0
12	0	0	8	8	0	0	8	8	0	0	2	2	0	0	6	6	0	0	0	0
13	0	0	6	6	0	0	10	10	0	0	3	3	0	0	8	8	0	0	0	0
14	0	0	4	4	0	0	4	4	0	0	3	3	0	0	10	10	0	0	0	0
15	0	0	0	0	0	0	6	6	0	0	0	0	0	0	6	6	0	0	0	0
16	0	0	1	1	0	0	14	14	0	0	0	0	0	0	1	1	0	0	0	0
17	0	0	7	7	0	0	14	14	0	0	0	0	0	0	1	1	0	0	0	0
18	0	0	15	15	0	0	17	17	0	0	1	1	0	0	1	1	0	0	0	0
19	0	0	10	10	0	0	19	19	0	0	1	1	0	0	0	0	0	0	0	0
20	3	2	0	5	5	7	0	12	0	0	0	0	0	1	0	1	0	0	0	0
21	5	5	0	10	2	3	0	5	0	0	0	0	0	2	0	2	0	0	0	0
22	0	0	0	0	4	5	0	9	0	0	0	0	0	0	0	0	0	0	0	0
23	0	1	0	1	6	3	0	9	0	0	0	0	0	0	0	0	0	0	0	0
24	0	2	0	2	5	2	0	7	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0
26	1	0	0	1	2	1	0	3	0	0	0	0	0	1	0	1	0	0	0	0
27	0	0	0	0	1	1	0	2	1	0	0	1	0	0	0	0	0	0	0	0
28	2	1	0	3	0	3	0	3	1	0	0	1	0	0	0	0	0	0	0	0
29	2	2	0	4	0	0	0	0	2	1	0	3	0	0	0	0	0	0	0	0
30	2	0	0	2	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0
31	2	1	0	3	0	2	0	2	1	3	0	4	0	2	0	2	0	0	0	0
32	0	1	0	1	0	0	0	0	1	1	0	2	1	3	0	4	0	0	0	0
33	1	0	0	1	1	1	0	2	0	5	0	5	1	0	0	1	0	0	0	0
34	0	1	0	1	0	1	0	1	1	2	0	3	3	4	0	7	0	1	0	1
35	0	0	0	0	0	1	0	1	0	2	0	2	0	4	0	4	0	0	0	0

36	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	3	0	0	0	0
37	1	1	0	2	0	3	0	3	0	3	0	3	0	2	0	2	0	0	0	0
38	0	1	0	1	0	2	0	2	0	2	0	2	0	4	0	4	0	0	0	0
39	0	0	0	0	0	2	0	2	0	1	0	1	0	5	0	5	0	0	0	0
40	0	1	0	1	0	1	0	1	0	1	0	1	0	2	0	2	0	0	0	0
41	0	1	0	1	0	3	0	3	0	4	0	4	0	6	0	6	0	0	0	0
42	0	1	0	1	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0
43	0	2	0	2	0	2	0	2	0	0	0	0	0	7	0	7	0	0	0	0
44	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
45	0	2	0	2	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
46	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	0	0	0	0
47	0	1	1	2	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
TOTAL	19	26	55	100	28	47	106	181	7	25	12	44	5	63	167	235	0	1	6	7

Appendix Table 15. Rock sole length frequencies (numbers) by haul.
M/V Nucleus Hecate survey, April 1-18,1982.

TOW NO.	45				46				48				49				50			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	1	1
11	0	0	0	0	0	0	0	0	0	0	6	6	0	0	0	0	0	0	2	2
12	0	0	0	0	0	0	0	0	0	0	16	16	0	0	4	4	0	0	1	1
13	0	0	0	0	0	0	0	0	0	0	11	11	0	0	1	1	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	1	1
15	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
24	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	1	0	0	1
25	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	1	0	1
27	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	1	0	1	0	1
28	0	0	0	0	0	0	0	0	2	1	0	3	0	0	0	0	1	1	0	2
29	0	0	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	1	1	2	6	0	8	2	0	0	2	0	0	0	0
31	0	0	0	0	0	0	0	0	1	3	0	4	2	2	0	4	1	2	0	3
32	0	0	0	0	0	0	0	0	1	3	0	4	0	4	0	4	1	4	0	5
33	0	0	0	0	0	0	0	0	0	4	0	4	3	8	0	11	0	7	0	7
34	0	0	0	0	0	0	0	0	0	4	0	4	0	10	0	10	0	5	0	5
35	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	7	0	7

36	0	0	0	0	0	0	0	0	0	4	0	4	1	0	0	7	0	6	0	6
37	0	0	0	0	0	0	0	0	0	5	0	5	0	0	5	5	0	9	0	9
38	0	0	0	0	0	0	0	0	0	1	0	1	0	0	7	7	0	6	0	6
39	0	0	0	0	0	0	0	0	0	1	0	1	0	0	5	5	0	7	0	7
40	0	0	0	0	0	0	0	0	0	1	0	1	0	0	4	4	0	6	0	6
41	0	0	0	0	0	0	0	0	0	2	0	2	0	0	3	3	0	5	0	5
42	0	0	0	1	0	0	0	1	0	4	0	4	0	0	2	2	0	6	0	6
43	0	0	1	1	0	0	1	1	0	1	0	1	0	0	0	0	0	8	0	8
44	0	0	0	0	0	0	0	0	0	2	0	2	0	0	1	1	0	3	0	3
45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5
46	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
48	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
50	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
51	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
52	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
TOTAL	0	0	2	2	0	0	4	4	14	51	44	109	12	64	9	85	4	99	5	108

Appendix Table 15. Rock sole length frequencies (numbers) by haul.
M/V Nucleus Hecate survey, April 1-18,1982.

TOW NO.	51				52				53				54				55			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	1	1	0	0	3	3	0	0	2	2	0	0	0	0
8	0	0	0	0	0	0	1	1	0	0	2	2	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	1	1	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	1	1	0	0	16	16	0	0	3	3	0	0	0	0	0	0	0	0
13	0	0	3	3	0	0	9	9	0	0	1	1	0	0	1	1	0	0	0	0
14	0	0	0	0	0	0	3	3	0	0	0	0	0	0	1	1	0	0	0	0
15	0	0	2	2	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	6	6	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
18	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	3	3	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
20	1	4	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	3	8	0	11	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	2
22	5	4	0	9	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
23	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
24	2	2	0	4	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0
25	2	4	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	1	7	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	2	5	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	2	0	2	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
29	0	2	0	2	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0
30	0	3	0	3	0	1	0	1	0	0	0	0	1	0	0	1	1	0	0	1
31	0	4	0	4	0	1	0	1	1	2	0	3	0	0	0	0	0	1	0	1
32	0	4	0	4	0	1	0	1	0	3	0	3	0	3	0	3	0	1	0	1
33	0	1	0	1	0	2	0	2	0	4	0	4	0	1	0	1	0	0	0	0
34	0	2	0	2	0	1	0	1	0	4	0	4	0	1	0	1	0	0	0	0
35	0	1	0	1	0	1	0	1	0	7	0	7	0	1	0	1	0	0	0	0

36	0	3	0	3	0	1	0	1	0	4	0	4	0	1	0	1	0	1	0	1
37	0	7	0	7	0	0	0	0	0	5	0	5	0	2	0	2	0	1	0	1
38	0	8	0	8	0	2	0	2	0	6	0	6	0	5	0	5	0	0	0	0
39	0	4	0	4	0	2	0	2	0	3	0	3	0	1	0	1	0	0	0	0
40	0	2	0	2	0	0	0	0	0	3	0	3	0	4	0	4	0	0	0	0
41	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0
42	0	1	0	1	0	0	0	0	0	2	0	2	0	1	0	1	0	0	0	0
43	0	0	0	0	0	0	0	0	0	4	0	4	0	2	0	2	0	0	0	0
44	0	1	0	1	0	0	0	0	0	1	0	1	0	3	0	3	0	0	0	0
45	0	0	0	0	0	1	0	1	0	1	0	1	0	3	0	3	0	0	0	0
46	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0
47	0	0	0	0	0	1	0	1	0	1	0	1	0	3	0	3	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	16	81	20	117	1	15	36	52	2	52	10	64	3	38	5	46	2	5	0	7

Appendix Table 15. Rock sole length frequencies (numbers) by haul.
M/V Nucleus Hecate survey, April 1-18,1982.

TOW NO.	57				59				60				61				62			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
20	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
21	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
22	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
31	0	1	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1
32	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0
33	0	1	0	1	0	2	0	2	0	0	0	0	0	2	0	2	0	3	0	3
34	1	1	0	2	0	0	0	0	0	0	2	2	0	3	0	3	3	0	0	3
35	0	3	0	3	0	1	0	1	0	0	1	1	0	6	0	6	5	2	0	7

36	0	4	0	4	0	1	0	1	0	0	0	0	0	3	0	3	3	5	0	8
37	0	3	0	3	0	1	0	1	0	0	0	2	0	3	0	3	3	0	0	3
38	0	3	0	3	0	2	0	2	0	0	0	2	0	0	0	0	0	2	0	2
39	0	1	0	1	0	3	0	3	0	0	0	1	0	0	0	0	1	5	0	6
40	0	1	0	1	0	1	0	1	0	0	0	3	0	0	0	0	0	3	0	3
41	0	3	0	3	0	2	0	2	0	0	0	1	0	0	0	0	0	2	0	2
42	0	5	0	5	0	2	0	2	0	0	0	1	0	0	0	0	0	8	0	8
43	0	4	0	4	0	2	0	2	0	0	0	1	0	0	0	0	0	2	0	2
44	0	1	0	1	0	2	0	2	0	0	0	1	0	0	0	0	0	3	0	3
45	0	5	0	5	1	1	0	2	0	0	0	0	0	0	0	0	0	2	0	2
46	0	1	0	1	0	4	0	4	0	0	0	0	0	0	0	0	0	2	0	2
47	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
48	0	2	0	2	0	5	0	5	0	0	0	1	0	0	0	0	0	0	0	0
49	0	1	0	1	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0
50	0	5	0	5	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0
53	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	2	49	1	52	2	39	1	42	0	0	21	21	1	26	0	27	18	45	6	69

Appendix Table 15. Rock sole length frequencies (numbers) by haul. M/V Nucleus Hecate survey, April 1-18,1982.

TOW NO.	63				64				65				66				68			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
4	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	48	48	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	83	83	0	0	0	0	0	0	0	0	0	0	5	5
9	0	0	0	0	0	0	41	41	0	0	0	0	0	0	0	0	0	0	9	9
10	0	0	1	1	0	0	13	13	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	12	12	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	1	1	0	0	20	20	0	0	0	0	0	0	0	0	0	0	2	2
13	0	0	0	0	0	0	32	32	0	0	0	0	0	0	0	0	0	0	1	1
14	0	0	3	3	0	0	23	23	0	0	0	0	0	0	0	0	0	0	1	1
15	0	0	2	2	0	0	23	23	0	0	2	2	0	0	0	0	0	0	3	3
16	0	0	0	0	0	0	9	9	0	0	0	0	0	0	1	1	0	0	0	0
17	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	1	1
18	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
21	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	0	1	0	1
23	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
29	1	0	0	1	0	2	0	2	1	0	0	1	0	0	0	0	0	1	0	1
30	1	0	0	1	1	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0
31	1	0	0	1	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0
32	1	1	0	2	2	5	0	7	0	5	0	5	0	0	0	0	0	0	0	0
33	1	2	0	3	4	3	0	7	0	2	0	2	1	0	0	1	0	0	0	0
34	1	0	0	1	3	5	0	8	0	1	0	1	1	0	0	1	0	0	0	0
35	2	1	0	3	10	2	0	12	0	3	0	3	0	0	0	0	0	0	0	0
									0	0	0	0	0	0	0	0	0	0	0	0

36	0	4	0	4	6	3	0	9	0	3	0	3	0	1	0	1	0	1	0	1
37	0	3	0	3	1	8	0	9	0	5	0	5	0	0	0	0	0	1	0	1
38	0	4	0	4	5	4	0	9	2	6	0	8	0	1	0	1	0	0	0	0
39	0	5	0	5	0	9	0	9	0	3	0	3	0	2	0	2	0	0	0	0
40	0	10	0	10	0	6	0	6	0	3	0	3	0	0	0	0	0	1	0	1
41	0	9	0	9	0	11	0	11	0	3	0	3	0	1	0	1	0	1	0	1
42	0	9	0	9	0	8	0	8	0	1	0	1	0	0	0	0	0	0	0	0
43	0	9	0	9	0	7	0	7	0	2	0	2	0	3	0	3	0	1	0	1
44	0	5	0	5	0	2	0	2	0	5	0	5	0	0	0	0	0	1	0	1
45	0	4	0	4	0	3	0	3	0	1	0	1	0	0	0	0	0	2	0	2
46	0	4	0	4	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
47	0	6	0	6	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
48	0	1	0	1	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0
49	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	10	78	8	96	35	85	323	443	4	45	3	52	2	9	1	12	0	12	22	34

Appendix Table 15. Rock sole length frequencies (numbers) by haul.
M/V Nucleus Hecate survey, April 1-18,1982.

TOW NO.	69				70			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T
4	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0
6	0	0	3	3	0	0	0	0
7	0	0	3	3	0	0	1	1
8	0	0	3	3	0	0	0	0
9	0	0	1	1	0	0	0	0
10	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	1	1
12	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	2	2
14	0	0	2	2	0	0	1	1
15	0	0	1	1	0	0	5	5
16	0	0	1	1	0	0	5	5
17	0	0	1	1	0	0	11	11
18	0	0	0	0	0	0	10	10
19	0	0	0	0	2	1	14	17
20	0	0	0	0	13	14	0	27
21	0	0	0	0	9	16	0	25
22	1	0	0	1	14	25	0	39
23	1	0	0	1	12	17	0	29
24	0	0	0	0	14	25	0	39
25	0	0	0	0	18	20	0	38
26	0	0	0	0	6	13	0	19
27	0	0	0	0	7	12	0	19
28	0	1	0	1	6	15	0	21
29	0	0	0	0	0	5	0	5
30	0	0	0	0	2	4	0	6
31	0	2	0	2	1	6	0	7
32	0	0	0	0	0	4	0	4
33	0	3	0	3	1	6	0	7
34	0	1	0	1	0	1	0	1
35	0	0	0	0	0	1	0	1

36	0	1	0	1	0	0	0	0
37	0	1	0	1	0	4	0	4
38	0	1	0	1	0	2	0	2
39	0	3	0	3	0	1	0	1
40	0	0	0	0	0	3	0	3
41	0	4	0	4	0	7	0	7
42	0	4	0	4	0	4	0	4
43	0	3	0	3	0	3	0	3
44	0	8	0	8	0	4	0	4
45	0	3	0	3	0	4	0	4
46	0	6	0	6	0	4	0	4
47	0	3	0	3	0	2	0	2
48	0	0	0	0	0	4	0	4
49	0	0	0	0	0	3	0	3
50	0	0	0	0	0	0	0	0
51	0	0	0	0	0	1	0	1
52	0	0	0	0	0	2	0	2
53	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0
TOTAL	2	44	15	61	105	233	50	388

Appendix Table 16. Sand sole length frequencies (numbers) by haul.
M/V Nucleus Hecate survey, April 1-18,1982.

TOW NO.	38				43				48				49				50			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
13	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	5	5	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	1
19	0	0	4	4	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	1
20	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	2	2	0	1	0	1	0	0	0	0	1	0	0	1	0	0	0	0
22	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	2	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	1	0	1
30	0	0	2	2	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0	0
32	0	0	1	1	1	2	0	3	0	0	0	0	0	0	0	0	0	1	0	1
33	0	0	1	1	0	2	0	2	0	0	0	0	1	0	0	1	0	0	0	0
34	0	0	3	3	1	1	0	2	0	1	0	1	1	3	0	4	1	1	0	2
35	0	0	0	0	0	2	0	2	0	1	0	1	1	1	0	2	0	0	0	0
36	0	0	3	3	0	1	0	1	0	0	0	0	1	1	0	2	0	3	0	3
37	0	0	1	1	1	4	0	5	0	0	0	0	0	3	0	3	0	1	0	1
38	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	2	0	2	0	1	0	1	1	0	0	1	1	0	0	1

40	0	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
41	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
42	0	0	1	1	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
48	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	38	38	6	26	16	48	0	4	0	4	6	10	0	16	5	12	0	17

Appendix Table 16. Sand sole length frequencies (numbers) by haul.
M/V Nucleus Hecate survey, April 1-18,1982.

TOW NO.	52				57				59				60			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
17	1	1	0	2	0	1	0	1	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
20	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0
21	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
23	0	0	0	0	0	2	0	2	0	0	0	0	1	1	0	2
24	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	1	0	0	1	0	0	0	0	1	1	0	2	1	1	0	2
27	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
31	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0
32	1	2	0	3	0	0	0	0	0	0	0	0	0	2	0	2
33	0	1	0	1	0	0	0	0	1	0	0	1	1	0	0	1
34	1	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0
35	0	2	0	2	0	1	0	1	0	0	0	0	0	2	0	2
36	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2
37	1	5	0	6	0	1	0	1	0	0	0	0	0	1	0	1
38	0	3	0	3	0	1	0	1	0	0	0	0	0	0	0	0
39	0	1	0	1	0	1	0	1	0	0	0	0	0	1	0	1

40	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0
41	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
42	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
43	0	2	0	2	0	0	0	0	0	0	0	0	0	1	0	1
44	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0
45	0	1	0	1	0	0	0	0	0	2	0	2	0	0	0	0
46	0	1	0	1	0	1	0	1	0	2	0	2	0	1	0	1
47	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0
48	0	2	0	2	0	0	0	0	0	2	0	2	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	2	0	2	0	0	0	0	0	1	0	1	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
TOTAL	11	32	0	43	0	13	0	13	5	11	0	16	5	14	1	20

Appendix Table 17. Sablefish length frequencies (numbers) by haul.
M/V Nucleus Hecate Survey. April 1-18,1982.

TOW NO.	25				39			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T
18	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0
22	0	0	1	1	0	0	0	0
23	0	0	1	1	0	0	4	4
24	0	0	7	7	0	0	3	3
25	0	0	8	8	0	0	4	4
26	0	0	10	10	0	0	3	3
27	0	0	16	16	0	0	3	3
28	0	0	10	10	0	0	0	0
29	0	0	19	19	0	0	0	0
30	0	0	1	1	0	0	0	0
31	0	0	7	7	0	0	0	0
32	0	0	2	2	0	0	0	0
TOTAL	0	0	82	82	0	0	17	17

Appendix Table 18. Sandlance length frequencies (numbers) by haul.
M/V Nucleus Hecate Survey. April 1-18,1982.

TOW NO.	5				8				12				34				35			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
15	0	0	3	3	0	0	2	2	0	0	1	1	0	0	0	0	0	0	2	2
16	0	0	11	11	0	0	29	29	0	0	6	6	0	0	3	3	0	0	20	20
17	0	0	27	27	0	0	48	48	0	0	19	19	0	0	23	23	0	0	24	24
18	0	0	18	18	0	0	14	14	0	0	7	7	0	0	22	22	0	0	3	3
19	0	0	1	1	0	0	3	3	0	0	0	0	0	0	3	3	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	60	60	0	0	96	96	0	0	33	33	0	0	51	51	0	0	52	52

Appendix Table 18. Sandlance length frequencies (numbers) by haul.
M/V Nucleus Hecate Survey. April 1-18,1982.

TOW NO.	36				62				63				66				69			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T	M	F	U	T
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0
15	0	0	2	2	0	0	0	0	0	0	2	2	0	0	6	6	0	0	5	5
16	0	0	5	5	0	0	8	8	0	0	16	16	0	0	13	13	0	0	19	19
17	0	0	18	18	0	0	24	24	0	0	29	29	0	0	26	26	0	0	30	30
18	0	0	7	7	0	0	7	7	0	0	15	15	0	0	9	9	0	0	10	10
19	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	1	1
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	33	33	0	0	39	39	0	0	66	66	0	0	56	56	0	0	65	65

Appendix Table 19. Yellowtail rockfish length frequencies (numbers) by haul. M/V Nucleus Hecate Survey. April 1-18,1982.

TOW NO.	22				43			
FORK LENGTH (CM)	M	F	U	T	M	F	U	T
14	0	0	1	1	0	0	0	0
15	0	0	1	1	0	0	0	0
16	0	0	1	1	0	0	0	0
17	0	0	0	0	0	0	1	1
18	0	0	0	0	0	0	3	3
19	0	0	1	1	0	0	18	18
20	0	0	5	5	0	0	7	7
21	0	0	9	9	0	0	2	2
22	0	0	9	9	0	0	0	0
23	0	0	3	3	0	0	0	0
24	0	0	1	1	0	0	0	0
25	0	0	2	2	0	0	0	0
26	0	0	1	1	0	0	0	0
27	0	0	2	2	0	0	0	0
28	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0
36	0	0	1	1	0	0	0	0
TOTAL	0	0	37	37	0	0	31	31